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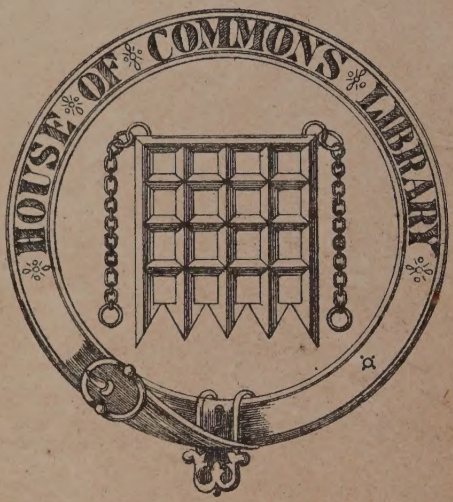

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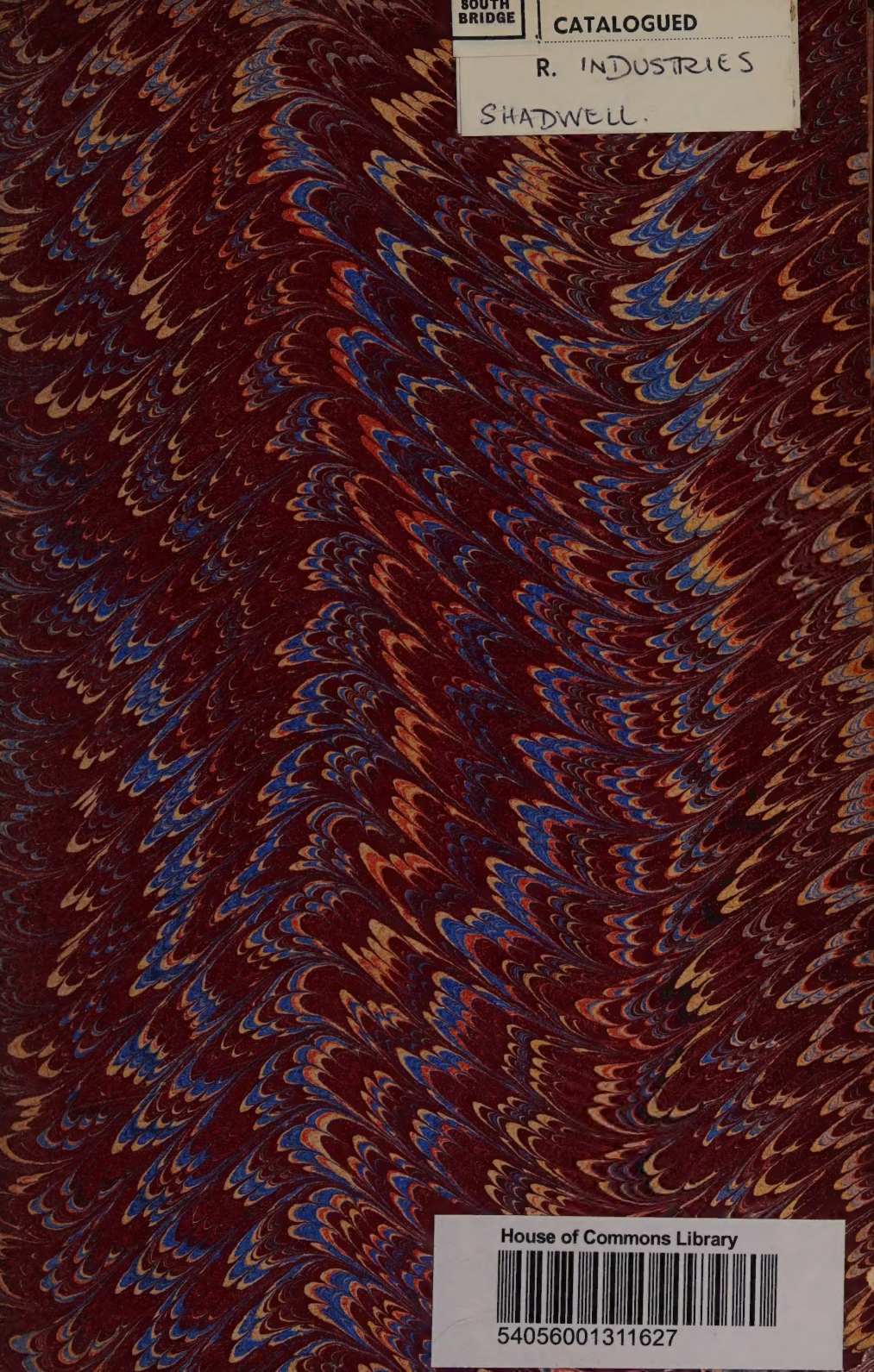

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INDUSTRIAL EFFICIENCY

A COMPARATIVE STUDY OF INDUSTRIAL LIFE IN ENGLAND, GERMANY AND AMERICA

BY

ARTHUR SHADWELL, M.A., M.D.

AUTHOR OF "DRINK, TEMPERANCE AND LEGISLATION"

IN TWO VOLUMES

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PREFACE.

It seems desirable to explain that this book has no connection with what is called "the fiscal controversy," in England. It was planned, and the investigation on which it is based was carried out, before that controversy arose. It contains nothing about imports and exports, and the only reference to free trade is confined to a few paragraphs in the last chapter. But it was inspired by the same circumstances, namely, the growing pressure of international competition in industry, which is evidently going to be the warfare of the future. It essays to deal with the other side of that problem, and to examine the conditions under which industries are carried on in the three leading industrial countries,[1] apart from tariffs. My aim was to make a more systematic comparison than has yet been done. For that purpose it was obviously necessary to limit the field, because observation is essential to a real comparison, and at the same time to make it wide enough to afford a fair basis. I therefore took a certain number of industrial centres in each country. In selecting them I was guided by three objects—(1) that they should represent the two great branches of competing industries—textiles and metals, (2) that they should be

[1] The name "America" stands for the United States. This usage seems to me both legitimate and necessary; it has long been allowed by general consent in regard to the adjective, and objection to the substantive is pedantic.

as purely industrial, and (3) as nearly comparable as possible. I then proposed to study these selected centres in detail, noting the actual conditions of life on the spot, and starting from this basis of observation to compare the principal factors *seriatim*, using statistics and other records to complete my comparison.

That plan has been carried out exactly as intended, except that domestic affairs compelled me to curtail a portion of the time allotted to Germany. In spite of that I do not think that my German friends will have any reason to complain of their treatment. The selection will probably be criticised; no one can criticise it more effectively than I could myself. Indeed, I feel very sorry for some of the omissions. One of those is Berlin, because Berlin is not only one of the greatest of manufacturing cities but a particularly modern one with some of the largest and most perfect works in existence, which can be said neither of London nor of New York. But I have left out all the capitals for detailed study, because in them the industrial element is over-laid and obscured by so many others of a special character that they rather confuse than enlighten. So I have merely taken brief note of them. Then it has cost me a severe pang to give up Scotland. The Scottish element, though relatively small in quantity is great in quality; the Scots make their mark wherever they go. And Glasgow, with Paisley, Partick, Clydebank, Rutherglen and other satellites, is perhaps the greatest of all manufacturing centres; but it is still more a great port and trading place, and these characters introduce entirely different conditions, as I subsequently point out. It is a serious mistake to confound trading with industrial places, and I have eschewed all ports, except Philadelphia, where that element is quite secondary. Moreover, to have in-

cluded Scotland would have greatly complicated my task in dealing with statistics and several special subjects. The same reasons apply to Belfast. I am acquainted with these and with many other important places omitted in all three countries; and looking strictly to the objects I had in view I abide by my selection as fairly and sufficiently representative. I beg readers to remember that my purpose was not to enumerate totals, but to compare conditions in detail, and those not of the whole but of the manufacturing population.

It has been a very laborious task, in which I have to acknowledge with gratitude the help of hundreds of people, from the British Ambassadors in Berlin and Washington to ordinary workmen. Government and municipal officials, factory and school inspectors, manufacturers, managers, engineers, chambers of commerce, teachers, health officers, statisticians, police, clergymen, journalists, trade union officials, librarians, private gentlemen, workmen and their wives, have all given me information without stint. In quoting remarks made in conversation I have not mentioned names, because it is a poor return for confidence to lay a man open to the chance of a troublesome correspondence; but in every case the persons quoted are those who have the best right to speak on the subject.

The first and last chapters are of a summary character. Chapters II., III., and IV. are devoted to the selected districts and towns; besides detailed descriptions they contain historical notes on the rise and development of the local industries, which I hope may be found interesting. The natural conditions are an important factor which is often ignored. In the descriptive part I have followed a general plan and have noted certain points in each case so far as information allowed, but I have not

attempted a rigidly symmetrical treatment, and have discussed special subjects such as infantile mortality, water-borne disease, markets, street paving and so on as they came up conveniently for notice in connection with some particular place. The remaining chapters deal more comprehensively with the most important conditions, which may be grouped in three divisions—(1) the factory (laws, premises, hours, wages, compensation for injury, benevolent institutions); (2) the home (housing, cost of living, social conditions, including games, theatres, gambling, drink, culture, locomotion, etc.); (3) miscellaneous (trade unions, pauperism and thrift, education). The most unsatisfactory subjects are wages and hours; both are very complicated and adequate information is lacking, so that only broad conclusions can be drawn.

Apart from official reports and statistics I have drawn very little upon other writers, not from any want of respect, but because I had no room either for repetition or for controversy. I have indeed been obliged to omit much of my own matter, including two long chapters on "physical deterioration" and vital statistics; and though the book contains a great deal of detail very much more has been omitted. My aim has been to condense the material, which is enormous, and to focus it upon the main question.

A large part of the matter relating to Germany was published in *The Times* in the autumn of 1903, and I find it necessary to draw attention to the fact because in books and other publications that have appeared since then I have seen not only facts and ideas taken from those articles but also entire paragraphs reproduced word for word and presented as original.

I trust that readers, and particularly German readers,

will note that this is essentially an objective and comparative study. Principles are discussed to a certain extent on some points, but only so far as to form a standard of comparison. If I were to discuss wages, housing or education, for instance, from an abstract point of view I should treat them differently. It follows that the advocacy of "reforms" is no part of my purpose here. For my own part I find it a more than sufficient task to ascertain a few facts with approximate accuracy and to gain a little insight into cause and effect. I have sometimes thought that something of the kind might, perhaps, be a useful preliminary to reforms; but that view has never been popular and I do not press it.

With regard to errors, I have spared no pains to avoid them, but there must be many in so large a mass of detail and I have had no help in revision. Corrections will be gratefully received.

In conclusion I feel constrained to apologise for the word "Efficiency," which has acquired unfortunate associations since this book was begun. It savours too much of the platform and political clap-trap, but I could find no better.

December, 1905.

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CHAPTER I.

GENERAL COMPARISONS AND NATIONAL QUALITIES.

It is possible to draw a valid parallel in considerable detail between Germany and England or Great Britain. Both are homogeneous countries with homogeneous institutions, although minor variations in character, customs and laws may be found in different parts; both are long settled, filled up, and possess old-established usages and traditions. Both, it is true, include some racial elements not wholly fused, but for all practical purposes the human material you have to deal with in Germany is German and in England it is English. And those terms connote distinctive national qualities, which assert themselves everywhere in some degree. Consequently comparisons can safely be drawn, not only in general, but in particular, if judicious allowance be made for circumstances. Further, a good deal of material for making them (though less than could be wished) is available in systematic records and statistics, which may be used to complete or correct the limited and defective conclusions derived from personal impressions.

It is not possible to draw a parallel in the same way between either country and the United States. The latter is new, partly developed and untrammelled by traditions. It is not a homogeneous country, but a medley of peoples nations, languages, creeds and climates, having in daily life little in common but the mail, the currency and the tariff.

The British Empire itself hardly comprises a more heterogeneous racial assortment than is to be found within the confines of continental U.S.A.; it has the white man, the black, the red, the yellow and the hybrid; the yellow includes most kinds of Asiatics and the white every kind of European. More than one-eighth of the population is foreign born, considerably more than one-fourth is of pure foreign parentage and more than one-third is of pure or half-foreign parentage.[1] In the industrial sphere this racial mixture is greatly accentuated. Of persons engaged in "manufacturing and mechanical pursuits" considerably more than one-half (56·2 per cent.) are of "foreign parentage," and more than one-third (35·1 per cent.) are actually foreign born.[2] Soil and climate are not less varied than the population; and though laws and social conditions possess more homogeneity than race and climate, they yet exhibit discrepancies so large and numerous as to make generalisations exceedingly difficult. How, for instance, are we to speak in general terms, as many have done lately, of "American education" or "education in America" when there are fourteen States which have no compulsory education,[3] and eight which contain from 95,000 to 175,000 native whites over ten years of age unable to read and write; whereas in others school attendance is compulsory for seven or eight years, and illiteracy is reduced to a very low point? What are we to make of such discrepancies as the variation of the school year in different States from seventy-six to 191 days and of the expenditure per pupil from less

[1] The precise figures are: Foreign born, 13·7 per cent.; both parents foreign, 27·6 per cent.; one parent foreign, 6·7 per cent.; partly or wholly of foreign parentage, 34·3 per cent. (Twelfth Census, U.S.A.). I shall give further details in dealing with particular localities.

[2] Twelfth Census, U.S.A., Special Reports: Occupations.

[3] *Annual Report of the Commissioner of Education*, 1902. Washington.

than four to more than forty dollars? Factory conditions present similar difficulties. Are those who speak of "American factory laws" aware that some important manufacturing States have no factory regulations at all and that no two States have the same laws?

Or, again, "the American workman". Who is meant by this expression—the "poor white" in a South Carolina cotton mill, who really is an American workman, or the New York bricklayer who may be one but probably is not, or the unskilled French-Canadian or Greek in a New England factory, the still more unskilled Slovak at Pittsburg, the highly-skilled Yorkshireman or German at Philadelphia, or the Italian navvy everywhere? To include all these and a vast number of others, whose circumstances, character and capacity are as diverse as their origin, under the term "American workmen" and to average their condition is absurd. How absurd will be understood when the reader learns that the weekly earnings of cotton spinners in America may vary from 7s. to £4 or £5, and the weekly rent of a room in different industrial centres ranges from 6d. to 6s., or more.

It must be admitted that such discrepancies as these, which might be multiplied indefinitely, make generalisations and averages very unsafe. The truth is that the United States is too vast and varied and complex to be reckoned up in the same way as older and smaller countries. For the purposes of any serious examination it must first be divided into sections, each consisting of a group of States having fairly homogeneous, natural, social and economical features. Then selected areas or communities can be examined as representative of a section but no more; and in each case regard must be had to the racial composition of the population.

And even this investigation is difficult and unsatisfactory, partly owing to the absence of some of those records which are available in older countries,[1] and partly to the wide spaces and great extent of the land, which makes a thorough survey hardly possible within a reasonable limit of time. The student is placed at a disadvantage; he cannot see everything and may miss things of importance. He must visit representative centres and travel rapidly over great distances to reach them; of what lies on the road he can learn little. In what he does see the stranger has the advantage over the resident. This holds good of every country, and is the reason why the impressions of an observant stranger are so interesting. His mind is a sensitive plate, ready to receive and record impressions; as they are repeated and multiplied, definiteness of outline is gradually lost, the plate becomes a jumble of blurred images and ends by being able to receive no impressions at all. We do not even see the most familiar things in our daily life, yet they have the greatest significance and are vivid to the eye of the stranger.

On the other hand, a whole field is almost closed to him —the home life. He either has no opportunity of seeing it at all, which is the usual lot of travellers, or he sees it through the rosy lens of hospitality. If travellers' impressions of any country, recorded by competent and dispassionate observers, are carefully studied, they will be found to go wrong most often in those matters which involve a knowledge of home life.

The astute reader will perceive that I am apologising in advance, and, indeed, I feel conscious of the difficulties of

[1] I refer particularly to vital statistics, which are very defective in the United States. On the other hand, some statistics are much more complete there; notably the Census, which is unique.

my task, and particularly in regard to the United States, for the reasons given. Nevertheless the candid inquirer may gather much positive information even in that bewildering expanse of life, and may focus it into perspective to form a picture of some sort, defective, no doubt, but neither vague nor distorted.

In spite of the racial mixture, the heterogeneous laws and the diversified physical conditions, the United States is a nation, and its citizens possess some very distinct national qualities which form an interesting contrast to those of the European peoples with whom I am comparing them. Some of these characteristics have a particular bearing on industrial efficiency; others are of wider application but are yet worth noting in that connection.

One which has made a very great impression on my own mind, and, I believe, on other Englishmen, though its significance may not strike other travellers in the same way, is the frank, direct and straightforward intercourse between man and man. To the stranger it takes the form of an easy, genial and confident reception. I met with the same experience everywhere, and therefore feel justified in regarding it as generally characteristic of American life. It struck me particularly, because I was incessantly engaged in gathering information from all sorts of people, and had just spent several months doing exactly the same thing in England and Germany. I have nothing to complain of in those countries. On the contrary, I met with the greatest kindness and courtesy, but in the States the attitude is different. It is not politeness, but a simple directness, often rather blunt than polite, though friendly. The man to whom you address yourself is not much concerned about your identity, nor does he need an introduction; he appears to rely on his judgment and form his own opinion. He has

perfect confidence in himself, and is therefore ready to place confidence in others; he does not stand off; he is candid and open and he expects the stranger to be so too. The same quality is, of course, met with elsewhere in individuals. In Germany I have on several occasions presented myself at a public office or a manufacturer's works without any credentials, and have been told and shown everything I wanted to know or see. But that is not the rule. Germany is a formal country, and formalities have generally to be observed. It derives from the Court, I imagine. The higher the social scale the more formal the procedure. In Government circles it becomes terrific. There credentials are absolutely indispensable, and in general they are advisable. In the United States I began in the same way with the regular formalities, and carried official credentials, but soon found them unnecessary. England in this respect, as in so many others, stands midway. There is more formality than in America, less than in Germany; but instead of formality there is something much worse, and that is suspicion. In England, and particularly in the industrial north, I regret to say, the air is commonly as thick with suspicion as with smoke. There is suspicion, deep and abiding, between employers and employed; there is a standing veil of suspicion between one manufacturer or man of business and his neighbour;[1] and there is a peculiar attitude towards the stranger. It seems to be assumed that any one who has not previously enjoyed the advantage of acquaintance with that particular north-countryman is probably a rogue, and, if not that, almost certainly a fool. Yorkshire is the special home of this amiable frame of mind, and, being a Yorkshireman myself, I am free to say

[1] I know a man who will not allow any one, not his brother or his oldest friend or the Prince of Wales, to enter his works.

so, though I love my county and know the fine qualities concealed beneath that discomfortable exterior.[1] There are, of course, exceptions; I have met with men of the finest and most open nature in the industrial world at home. And the unexpansive stand-off character has another side. An Englishman, if he does require a personal introduction, is more bound by it than any one else. He is reserved and chary of friendship, as of speech, because it means more to him. A man stands sponsor for the stranger whom he introduces to his friends; such an introduction admits within the inner circle on a friendly footing and secures the stranger the finest, because the most genuine, reception in the world. Neither in Germany nor in America does an introduction carry the same significance. It is either purely formal or quite casual.

Speaking generally, however, an over-suspicious habit of mind is common among English manufacturers and men of business. An American gentleman, the head of a very large concern in the north of England, told me how strange and uncomfortable he found this atmosphere. Not only were his English workmen invincibly suspicious, but he felt the same barrier when doing business with his neighbours. "I don't know how it is," he said, "but I can't get them to do business straightforwardly. They seem to think I am always trying to do them and they mean to do me first." No one who knows that part of England will be disposed to deny the accuracy of the diagnosis. It is impossible to regard this frame of mind as a sign of strength. The over-suspicious man prides himself on his shrewdness,

[1] An amusing instance of the Yorkshire hardness and disbelief in good intentions occurred in my native place. A cottager's daughter was ill, and my mother sent her to the seaside. Her parents could not understand it. "Ah thowt an' Ah thowt an' Ah thowt, an' Ah *couldn't* think what good it would do Mrs. Shadwell to send our Annie to Scarborough."

but that is part of his stupidity. Like St. Paul, he glories in the things that concern his infirmity, for habitual distrust is a sign of weakness. There is no fool like a very shrewd one. I met with one in America and one in Germany, and I am afraid it is not a mere coincidence that the first had lived many years in England and the second called himself half an Englishman. And yet suspiciousness can hardly be called a characteristic English quality, though it undoubtedly is a Celtic one. John Bull is not a very cautious person; his bitterest enemies would not give him that character in general. But he is secretive, and this turns into suspiciousness in certain circumstances. Directly he touches business he thinks that every one has a dark design upon his pocket. Perhaps it is the result of experience, but the same weakness shows itself in other directions, and if any one challenges this opinion I shall take refuge behind a good authority. "Our hospitals," said *The Times* in a leading article, 20th December, 1904, "probably suffer from that secretiveness which is a national failing. People cannot be got to co-operate in this country, because each is jealous of his neighbour knowing how he conducts his affairs."

Whatever its origin may be, the habit of distrust is both a sign and a source of weakness in industrial matters. It means friction all round. The standing objection of workmen to innovations and improvements is rooted in it, and a very large proportion of the disputes between labour and capital can be traced to nothing but mutual mistrust. The same weakness has begun to show itself in America. The only thing I found employers suspicious about was the organisation of labour. Many will not allow any one connected with trade unions to come near their works, and they are beginning to scrutinise every stranger, though half

apologetically, lest haply he may be a "walking delegate" in disguise. This fear is a confession of weakness. Social democracy is the object of similar suspicion and dread in Germany. In this important respect, therefore, English employers do not stand alone; in fact the spirit of mistrust is rather diminishing between labour and capital in England, while it is increasing in America and Germany. It would have increased much more rapidly in the former but for the free and frank intercourse between employers and employed which still prevails in conformity with the national habit. This has been a more formidable barrier to the progress of trade organisation than diversity of language among the workpeople. When the "help" is on such easy terms with the "boss" the function of the organiser does not appear to be needed. Freedom of intercourse is in other respects undoubtedly an advantage. It facilitates and expedites the transaction of business in every way. In America men go direct to the point; they do not beat about the bush. But more than that. There seems to me to be something great at the back of it—a consciousness of strength, of rectitude and good-will. A man is willing to believe well of another because he means well himself to others and fears no man. It is the fine flower of democracy, that stately seeming tree which yet bears so many ugly and poisonous blossoms; and perhaps that which it implies will be enough to carry the vast Republic through the grave evils which are springing up and threatening to choke its healthy life.

It may be thought that this quality is inconsistent with the reputation for trickiness commonly attributed to Americans, but I am convinced that whatever may be the sins of individuals or even of some sections of them, that reputation is misapplied to the American people. It has a certain

foundation. There are rogues, of course, and in them the national bent for ingenious devices develops into exceptionally artful forms of swindling. Of course, too, foreign countries get the benefit of their talents, for persons of this class find it desirable to seek fresh fields from time to time. That is a general law, and every country where there is any harvest to be made receives the attentions of those of its neighbours' sons and daughters who need change of air and have to leave their country for their country's good. Wherever they go they give it a bad reputation, which the innocent have to bear. It may be that American rogues are more unscrupulous as well as more artful than most others, though it would be very difficult to sustain that charge in the face of European revelations; it may be that rogues are more numerous in America than elsewhere, and, perhaps, that is more likely. They are, undoubtedly, more audacious and unblushing. Nevertheless I am certain that the national character is the reverse of tricky, and I venture to think that the Presidential election of 1904 bears me out. I am going to say nothing about politics; I hate them with all my heart, for at the sound of political strife Truth turns away her head and veils her face, and I suppose that is quite as true in general of American politics as of others. But the election was not a triumph of politics. That is the very thing which makes it so remarkable; it was rather a revolt against politics. All the people who understand such matters were out of their reckoning and taken by surprise. The result was universally attributed to Mr. Roosevelt's personality. And what is that personality? Of the millions who voted for him comparatively few can know him personally; they know him by his public words and acts. I speak with great diffidence and under correction as a stranger who

does not profess to know anything of the ins and outs of the matter, but a stranger can look on at a public event of world-wide importance and form a more or less intelligent opinion about it. In that capacity I formed an opinion of Mr. Roosevelt from his public words and acts, as the large American public has done. And having also formed an opinion of the large American public I was not at all surprised at the election. For it seemed to me that Mr. Roosevelt is a typical American in those very qualities which I venture to call national—in directness, straightforwardness, rectitude of purpose and plain dealing—in all that is the reverse of trickery. And I believe that is the main cause of his unprecedented majority. The Americans like that type of man because it is American; it embodies those qualities which are the quintessence of the pure democratic ideal; and perhaps it appealed to them with particular force, because that fine, fearless, national confidence which is so pleasant to see and so potent for good, is being sapped by greed and the scramble for money and is giving place to mistrust. The worsening relations of capital and labour are only one sign among many. The corruption in local public life, which is rooted in the same passions, cannot but increase it.

I do not intend to say much about this ugly topic because I have made no personal study of it and it has only an indirect bearing on my subject, but an Englishman cannot travel in America without being impressed by it. We hear very little in Europe about American local affairs except those of New York and have no idea of the pervasive corruption. Tammany, of course, is a household word; it stands for something vaguely bad, but what or how nobody really knows. It seems to be beyond the reach of mere European understandings, if, indeed, anybody

understands it in New York, which I doubt. I have several times asked Americans to explain it, but after two sentences those present always began to contradict each other and never got any further. But, so far as I can learn, Tammany is clean compared with doings in St. Louis, Philadelphia, and elsewhere. What surprised me, however, was to find some scandals of the sort going on wherever I went. I do not mean gossip, but things proved in court and freely admitted. Englishmen are not in a position to throw many stones about it. Here, again, we stand midway between Germany and the States. In the former, local public life is, in general, very clean both personally and politically; the system is entirely different, much less dependent on popular election, and affairs are conducted with a single eye to the public welfare. In England we have clean administrations too. The weakness is more often political than financial. That is to say, the public welfare is not sacrificed to enrich individuals, although enormous sums might be made; but it is sometimes sacrificed to benefit classes who have votes, or to push causes which are assumed by those who hold the reins to be identical with public interests and are made ends in themselves. London is a case in point. Some of our large provincial towns are still better administered, but in others the same kind of tampering with the strict discharge of public duties goes on from ostensibly lofty motives and is landing them in financial difficulties. In others, again—chiefly the smaller ones—corruption of a worse kind is common. It is not so much a matter of actual bribes or "boodle," as in America, though that occurs too, but a secret and underhand sort of corruption, which is in some ways worse. Men get themselves elected for the express purpose of preventing things from being done that ought to be done.

The chairman of the Sanitary Committee, for instance, is often an owner of insanitary property, and he takes very good care that no inconvenient reforms are carried out. In other cases the place is run by a gang—owners of house property, builders, surveyors, house agents, and so forth—for their own benefit. This sort of thing is seldom exposed, especially if the precaution is taken to have the local papers in the swim. I know instances of all these things, and therefore I cannot hold up my hands in horror at American corruption; but I confess that its general prevalence and barefaced audacity staggered me. It takes forms of astonishing meanness. Such is the demanding of bribes by members of a school board from persons applying for the post of teacher, one of the worst paid callings in the country. It seems that so long as there are men who prefer money to duty and honour, corruption is inseparable from democracy in large communities; and the more democratic they are the greater the corruption. The scum comes to the top. Pushing men make a business of getting elected for their own ends; disinterested and high-minded citizens shrink from descending into the squalid arena thus created and retire from participation in public life. If not, they touch pitch and are defiled. In great issues, however, the people still break through the meshes of intrigue, and in the presidential election we see a fine national ideal triumphing over the crookedness of politics. It is a cheering augury. The greatest thing in the States is the White House. Every man must take off his hat to that unique building, more distinguished than the stateliest royal palace, like the historical undecorated statesman among his beribboned colleagues. It stands for dignity and modesty, for self-respect and self-restraint, for simplicity and sincerity. How much of those qualities is left

among American citizens no one can say, but there may be more than appears on the surface and the emphatic choice of a man worthy to sit in the White House is evidence of it.

There is one form of corruption in America which touches industrial questions directly, and that is the bribing of inspectors. I have no first-hand knowledge of it and cannot say to what extent it exists, but I have seen much convincing evidence that it does exist. There is no sign of it in England or in Germany, and all the evidence points to the conclusion that it is never attempted or even thought of.

Passing on to those distinctive national qualities which bear most directly upon industrial efficiency, we find a most striking contrast between Germany and the United States. It is profoundly instructive to England, because she lies in the middle between these, her greatest competitors, whose merits and methods are diametrically opposite.

The Germans are slow, deliberate, careful, methodical and thorough. Some people use the word "plodding," which carries a touch of disdain; but Germany can afford to smile at it. She can point to her long roll of names in the very front ranks of intellectual achievement—in philosophy, poetry, science, statesmanship, scholarship, history, art and war—and challenge the least plodding and most hustling of her contemporaries to show the like. There is a round score of them at least, from Kant and Goethe to Wagner and Virchow, very bad to match. And with not less justice she can point to her industrial and commercial development to-day. Not a rich country, possessing no exceptional resources or facilities, no extensive and convenient seaboard, with no tide of skilled immigrant labour to make things easy, and with enemies in arms on both sides of her, she has yet within the space of thirty years,

and while bearing the burden of an enormous system of military defence, built up from comparatively small beginnings a great edifice of manufacturing industry which for variety and quality of output can compete in any market with most of the finest products of Great Britain. That is no exaggeration but a plain statement of facts, and it can be said of no other country. It has been achieved by hard work, intelligently and methodically directed, by pains and thought and sacrifice. Industrially the Germans excel on the scientific side; they are not an inventive or adventurous people; they are not quick or ready in emergency; they are no pioneers in the wilderness; they require time for thought and action; they need regular hours, familiar surroundings and a road marked plain before them. But they have an unequalled capacity for mapping it out in the right direction and following it steadily. Every detail of their industrial life bears witness to these qualities, from the Government, which never misses a point or loses a chance of promoting national interests, down to the working man who requires an hour and a half every day for his dinner, but can be trusted to do exactly what is expected of him. Their dislike of hurry and their love of thoroughness are shown in innumerable little things. It is, for instance, a common practice of leading newspapers to defer comment on current events for a day or two; then they produce a carefully thought-out and reasoned essay, not a hurried scramble of disconnected comments put together under a tremendous pressure which hardly leaves the ready writer time even to read the intelligence on which he is supposed to deliver a mature verdict. One never sees any one run in Germany, and a hurried pedestrian is a rare sight; but they get there all the same, as the Americans say.

The Americans themselves get there in exactly the opposite way. They are alert, inventive, ingenious and adventurous beyond all other people, but hurried, careless and unthorough. The merits of this temperament are more immediately obvious than the defects, and have consequently attracted more attention. The roar and bustle of industrial life in America, the excitement, the abundance of novelty, the enormous scale of operations, the boundless adventure, the playing with millions—all these impress the mind and draw attention from the defects which they foster and conceal. An English workman who had lived for years in the heart of it, where the smoke is thickest, the roar of machinery loudest and the sound of millions most common, summed it up better than any one I have met. "This is an adventurous country," he said, "they think nothing of millions; but it's all hurry-skurry work. Let her go! Give her hell! That's the word." The recklessness is magnificent and I suppose that at present it is business; but that is because the country is not yet filled up. This is really the bed-rock fact about the United States at the present time from the industrial point of view. It is an immense country, with vast natural resources, a sufficient population to develop them and yet abundant room for expansion There are or seem to be boundless possibilities within the reach of every man, and being generally intelligent, alert and ambitious, they hurry to realise them. If a man fails to-day in one direction, no matter, he can try again to-morrow in another.

I make the suggestion with diffidence because I have no personal knowledge of the United States as it used to be in the past; but surely the tearing, driving character which is considered—and I think rightly considered—distinctively American is rather a new thing. The Yankee of old, as he

used to be presented to us by American writers, and that not so very long ago, was an astute but deliberate person, saying very incisive things in a slow, drawling way, quick of mind but slow of movement, not to be hurried and much given to "whittling," which is not a very feverish or purposeful occupation. Does anybody whittle now? Perhaps nobody ever did actually whittle; but I think that traces of the whittling spirit are still visible enough to any one accustomed to study details. The present spirit arose—so it seems to me—with the development of the railway system, which opened up the country, poured in the population, brought the natural wealth to market and produced the millionaire. Since then industrial activity has gone with a rush. There was money to start industries and money to be made out of them; there was power and raw material in the ground; there was labour, skilled and unskilled, coming along all the time. And there was nothing to hinder; no enemies to watch, no army to keep up, perfect security and tranquillity. A great industrial expansion was inevitable; it could not help coming and bringing with it boundless possibilities of wealth. The millionaire multiplied, swelled to double, treble, tenfold his former bulk, and set such a glorious, shining, dazzling example that no man could behold it unmoved. Now in the United States there is "equality of opportunity," and all men with millionairedom in their souls—a numerous body—felt that even if they could not reach that height they might get near it. So the scramble for money became the occupation of a large part of the population. Hence the commercial hurry-skurry.

But hereditary tendencies are tenacious, and latent whittling is visible all through the hurry. When a man waits for the elevator to take him up or down a short flight

of stairs, he is whittling. When he comes down in the morning in dirty boots and sits on a chair for ten minutes to have them cleaned on his feet, he is whittling. When he gives up his baggage checks and waits for the man to get it out, he is whittling. These are all national practices and evidences of national smartness, but they are indistinguishable from dawdling to any one of a quick and energetic habit of body. They are a waste of time. Quickness in the States is of the machine and of the mind, not of the person. The cars and the elevators hurry, the people do not. They contentedly wait for either twice as long as it would take them to cover the distance on foot. No one runs; few walk if they can help it. I have repeatedly missed a train and lost several hours by following directions and using the time-saving appliances which are so prized. On one occasion I had been over a mill and intended to walk back to the station, not more than 500 or 600 yards away; but the proprietor, who had shown me over and treated me with the utmost kindness, begged me to wait for the electric tram, which started from his door. He would not hear of my walking, and I yielded to his persuasion. The car was certainly very speedy, but it first made a detour of at least two miles and then left me stranded in the middle of the town, further from the station than at the start, to wait for another. I lost my train and about half a day. On another occasion and in another place I waited for the tram again under directions, together with a number of other people. We were all going to the station, and as I discovered afterwards we could have walked in half the time we wasted standing in the street. We lost the train, but they all took it with perfect placidity and settled down contentedly to wait for the next. After several similar experiences I perceived that it is trouble

Americans care about, not time. Where trams exist walking is not thought of, though it may be quicker. After that I got over the ground better. On receiving the usual instructions I would ask: "But isn't it quicker to walk?" The question always excited surprise and often elicited a deprecating admission that it might be quicker to walk, but uttered in a tone which plainly said, "if any one in his senses ever did such a thing". It reminded me of a conversation I once had with a German who was extolling the merits of socks made, like gloves, with separate toes. Among other advantages claimed was cleanliness. I ventured to object that it was quite possible to keep the feet clean without this device. "Oh, well," he said, "if you were to take a bath every day, but who does that?" His conception of personal cleanliness was limited by local custom, and so, I think, is the American conception of personal quickness.

The elevator plays the same trouble-saving, time-wasting part inside that the electric car does outside. It is very speedy for high flights, as the other is for long distances, and the sky-scraper would be impossible without it, but dependence on it wastes much time. Stairs have fallen out of use. In public buildings, hotels and business premises you are invariably directed to the elevator. You may have to walk round two corridors, ring the bell and wait two minutes or more; still that is assumed to be preferable and is actually preferred to walking up a flight or two of steps, or even down them, in a quarter of the time. Similarly with the check system for baggage. It saves trouble at the expense of time, though no true American will admit it. The terrible old English plan of picking your luggage out of a heap and going off with it is troublesome but far more speedy, and a nation which always prefers bodily action to

inaction is not likely to give it up for the convenient but tardy check process, which, by-the-by, is of European, not American, origin. Type-writing is another insidious means of saving trouble and wasting time. Rather than write a letter a man will wait for the type-writer long enough to write a dozen; or he will rattle through his correspondence in a few minutes in order to spend hours in talking, a method of wasting time to which Americans are peculiarly addicted.

I dwell on the distinction between saving time and saving trouble, and on the fact—of which the close observer will find innumerable other proofs—that the latter and not the former is essentially characteristic of Americans, because it has an intimate relation to the distinctive qualities of their industrial success. The line in which they are supreme is the invention of labour-saving machinery. They possess an inexhaustible fertility in devising ingenious contrivances for replacing toil. One explanation of this is the necessity of minimising labour because of its high cost. No doubt that is a great stimulus, but there is more than that. There is a positive dislike of processes involving physical exertion. Perhaps this is the correlative of great mental activity and is eventually traceable to climate. It is often said that the air in the United States has a peculiarly stimulating effect, and I think that is true. It is certainly different from the air on this side of the Atlantic. I noticed a number of definite physiological effects on myself, which proved to me that the climatic influence is real. It stimulates cerebral activity in certain directions, of which speech is conspicuously one. The Americans have a natural gift of oratory and are tremendous talkers. It also promotes a general nimbleness of mind which appears to take the place of bodily movement. What is restlessness

of body in these damp islands becomes restlessness of mind in that dry air. Hence the paradoxical combination of love of hurry with dislike of bodily exertion. It is the mind that hurries, and no doubt it hurried in the old whittling days; but the material objects among which it moves to-day with so much visible effect did not then exist. The distinctive quality of American humour is the surprise caused by the mind jumping to the end without taking the intermediate steps—a form of irony.

These qualities have a weak side. They are fatal to thoroughness and finish unless these can be attained by mechanical means, which is very rarely the case. For first-class work some plodding is required. The elevator whisks you up to the top of a sky-scraper in no time; but there are heights above sky-scrapers, and to reach the summit you must climb with toil and pains. It is surely remarkable that so little first-class work of any kind is produced in the United States, with all its wealth, population, intelligence and educational keenness. An American writer on science has recently deplored the fact in relation to that field of intellectual activity.[1] All the recent discoveries of importance, from bacteria to radium, have come from Europe. This comparative sterility is commonly ascribed to the worship of wealth which attracts and drives the educated youth of the country into commercial careers. That has something to do with it, but is an inadequate explanation. The number who go into academic life and the learned professions is very large, and they produce a great deal of a certain standard, but nothing really first-rate. Probably the nearest approach to it is in art; but the eminent American painters and sculptors seem to live chiefly in Europe, and their work characteristically lacks

[1] *New Conceptions in Science*, by Carl Snyder.

the merit that comes from plodding. It is marked by bold conception, daring innovation, and it is effective; but the effect is got by slap-dash means, not by faithful finish. Or take architecture, which is more in evidence than anything else. I shall have more to say about it when I come to describe American cities, and will merely quote here some remarks made in my presence by a better judge than myself, an American architect of high standing. "In architecture, Americans only stick decoration on to utilitarian forms as quickly and cheaply as possible. They never carry anything to its legitimate development, to the point of being a masterpiece. Architects are always asked to put a quart into a pint pot. Not a piece of work ever comes into my office with enough money to carry it out even decently; everything is done in a hurry. What is wrong is the attitude of mind, which has never got beyond adolescence. An American street reminds me of nothing so much as a drummer's sample book. Everything is absolutely undignified, a regular harlequinade."

Another home critic draws an illustration of the same failing from a different field of observation:—

"There is a danger that slovenliness may become a national habit. Slovenliness is something more than a violation of good taste: it is indifference to the best way of doing things; it is a kind of easy-going morality in matters of method; it involves a low standard and its influence upon children is in the last degree disastrous. Now in nothing are Americans, as a whole, more slovenly than in the use of their own language. Everywhere, wherever men and women talk, one hears careless, inaccurate, slovenly speech."[1]

I should hardly say that myself about American speech.

[1] *The Outlook* (New York), 4th April, 1903.

There is an affectation of slovenliness as a smart thing, noticeably in New York, of which I say more presently in connection with that city, and children are allowed to mumble anyhow in school, but otherwise my impression certainly is that—apart from questions of accent—American enunciation is better than English. It is clearer and more distinct, and the general use of language in conversation, class for class, is not inferior. Professor Stanley Hall does, indeed, say of the language:—

"By general consent both high school and college youth in this country (United States) are in an advanced stage of degeneration in the command of this, the world's greatest organ of the intellect. Every careful study of the subject for nearly twenty years shows deterioration."[1]

I am not in a position to deny it, and to judge by comparing the signatures to the Declaration of Independence and those of the men who represented the United States a hundred years later (suggestively published together in *facsimile*), mental degeneration of every kind has been going on for a good deal more than twenty years.[2] But I am afraid we are in no better case on this side. To my ear, which is very sensitive on the point, most people everywhere speak with painful indistinctness, and their vocabulary is undeniably miserable. In one respect we are in worse—much worse—case. It is not strictly relevant to the point, but it must be mentioned, and I take this opportunity to mention it. If there is one thing above all others that the English people have to be ashamed of, it is

[1] *Adolescence*, by G. Stanley Hall.

[2] The contrast in these interesting *facsimiles* between the fine, strong, clear signatures of 1776 and the scratchy, nervous, illegible scrawls of a hundred years later is very striking. A highly patriotic and cultured American, to whom I mentioned it one day, said: "We have not fifty-four such men in the States to-day."

the language habitually used by the lower classes. It has undergone a marked change for the worse within my own recollection. Rough working men formerly used "swear words," and Dr. Johnson's "term of endearment among sailors" was often in their mouths, but they were of the lowest class and they did not use the filthy language current now. In my own part of the country, though the people speak more emphatically there than anywhere else, even labourers only used modified expletives, such as "dang" for "damn," "gor" for "God," and so on. Children were not foul-mouthed. I perfectly recollect the bad language used by men in the streets when I was a child, as I was rather observant, but I never heard any from children in any part. Now the most filthily obscene expressions have become current coin and are perpetually in the mouths not only of rough men and vicious youths, not only of women, but of little boys and girls. It is sickening to hear them, but apparently it gives no concern to the "educationalists," who are so immersed in controversy and theory as to be blind and deaf to what is about them. This language is not used in America. As for Germany, the swear words are of a very mild order and abusive language is actionable. Correct German and good enunciation are made a cardinal point in primary education, and the greatest pains are taken to secure them, as I have repeatedly witnessed.

But whether slovenly speech be an American failing or not, there is no doubt about slovenliness in other, less personal, matters. "Let it go at that," seems to be written all over the face of the land. You see it in wretchedly laid railway and tramway tracks, in swaying telegraph poles and sagging wires, in sliding embankments and rotten trestle bridges, in level crossings, in dingy and battered

street letter-boxes, in broken fences, in streets unscavenged, unpaved or full of deep holes, in broken-down vehicles with ricketty wheels too slight for their work and harness tied up with string, in rubbishy cutlery and a hundred such articles, in scamped and hurried work everywhere. There seems to be a disdain or impatience of thorough workmanship and finish in detail. This is one explanation of the railway death-list. In the three years ending 30th June, 1900, there were killed on American railways 21,847 persons; in the South African War, which lasted about three years, there were killed in battle and died of disease about 22,000. Since 1894, when records began to be kept, 78,152 persons have lost their lives by railway accidents, and the number rises year by year; in 1903 it reached 9,984. When you see the railways and observe how things are done, you are not surprised.

The same national failing is conspicuous in the factory and workshop. You see machinery racketting itself to pieces and spoiling the material in the attempt to run faster than it can; you see waste of fuel and steam, machinery clogged and spoiling for want of care and cleanliness, the place in a mess and the stuff turned out in a rough, badly-finished state. When you see this over and over again, you begin to understand why the United States, with all its natural advantages, requires a prohibitive duty on foreign manufactures which it ought to produce better itself. The duty on cotton goods ranges from 68 to 88 per cent., and yet the newest hotel in New York has to get its cotton fittings and furniture from Lancashire. Similarly men who wish to be well-dressed have to buy English cloth weighted by a duty of 100 to 140 per cent.

There are exceptions, however. I have seen, and shall

describe, factories to which none of these remarks apply, and where beautiful work is done. Such establishments can sell their products anywhere and do not need protection. These products are, for the most part, of a particular kind, and conspicuously illustrate the national qualities. They are ingenious machines or other articles specially designed to save labour and trouble. Perhaps the most important are agricultural machinery and small automatic machine tools used in a great variety of industries; but articles in domestic use, such as type-writers, sewing machines and fountain pens, are more familiar. Americans excel, not only in the invention, but in the making of these things, which are turned out exceptionally light and well-finished. That is their distinctive line—the production of dodgy, trouble-saving, convenient mechanical appliances of a light kind. In it they are great innovators and supreme; outside it their work suffers from hurry, want of finish and want of solidity. I have seen heavy machine tools by American makers in English and German workshops and the verdict was identical—they are too light for the work. Heavy drills, for instance, shake so much when set to work that they do not bore true. For the small American tools, both English and German manufacturers have nothing but praise.

I have dwelt somewhat long, and, I fear, too discursively on these points, because they do not appear to be generally appreciated; but they are essential to an intelligent comparison. To recapitulate, the German method of advance is by careful, well-considered steps; the American by brilliant leaps—it is much quicker but sometimes lands in the wrong place. The English, as I have said, come between. They are less—very much less—methodical than the Germans, less alert and enterprising than the Americans. Thus they

do not exhibit the distinctive merits of either, and they are always being scolded for it, first on one side and then on the other, by candid critics at home who do not take comprehensive views. But when you come to think of it dispassionately, a middle position is not a bad one to occupy, for if it misses the merits of the extremes it also avoids their defects. The English do not set about things in such a systematic and scientific way as the Germans, nor are they so bold and dashing as the Americans, but they work much more quickly than the former, and much more carefully than the latter. They can hurry, if need be, and yet turn out good work. Industrially they believe themselves to stand alone for first-rate workmanship, though in that they are a little mistaken. The Germans, it is true, were at one time noted for producing cheap and inferior things, but that was because they could only find an opening in that direction. Having secured their footing they have proceeded steadily from lower to higher grades and have proved that they will not stop short of the highest. They are gradually but surely mastering every industrial field in their own way. There is, however, justification for the pride of English manufacturers and workmen in their achievements. Their work is distinguished by solidity, durability and finish, and at the same time they have been great pioneers, the greatest. They are an inventive people; the inventive genius of the Americans is derived from their British blood, and not a few of their inventions are actually of British origin. One of the most recent and most important—the automatic loom—is the invention of a Yorkshire mechanic, taken up and developed into a practical thing by an American firm. Another—the ring spinning-frame—originally hailed from Lancashire; it has been improved and developed by American ingenuity and has now come

back again. The United States, prolific as it is in clever patents and in the improvement and application of processes, has yet to produce an original invention of the industrial importance of the power-loom, the carding machine, the spinning-frame, the combing machine, the puddling furnace, the crucible, the Bessemer converter, the open hearth, the steam hammer, the rolling mill, the hydraulic crane and the hydraulic press, not to mention the steam engine.

Thus in regard to national qualities the English are perhaps rather better equipped by nature for industrial success than either of their chief competitors. Wherein they fail is in the application of their powers, which have been to a great extent allowed to fall into disuse, while the others have gone ahead each in her own way. In both I have met with a pretty general tendency to regard England with a sort of pity, mingled with contempt, as a spent force. It is a frame of mind which does not show much more grasp of the true situation than the total disbelief in the validity of foreign competition and in the capacity of any one to compare with themselves professed by every trade union official in England whose opinion I have asked. I believe the truth to be that, on the one hand, foreign competition is real and serious in the present, and going to be far more severe in the near future ; and that, on the other the English still possess the energy and capacity which distinguished the nation of old, but have for some time past directed both into other channels. The survival of capacity may perhaps be seen in the fact that out of the three most important mechanical developments of the day, while electrical traction and power owe most to the United States and Germany and automobile traction to France, the steam turbine, which may turn out to be more important than either,

owes most to England. The history of the Atlantic Shipping Combination, which has had to fall back on an English manager, and the large contracts recently secured in America by English firms, suggest the same reflection. The other channels to which I refer are amusement and play, which have become our work in all classes. I shall have more to say on this head later on, and merely make the statement here to explain my meaning in saying that it is not so much in the possession as in the application of qualities that the weakness of the English lies. But, of course, application itself implies certain qualities; and here again we find some interesting national differences.

I have suggested that the restless driving character of the Americans has been set in motion by the desire for wealth and the potentialities of millionairedom, and undoubtedly that is a prime factor. But there is more than that; it would be unjust to ascribe their enterprise and activity merely to the pursuit of money. They are a highly emulative people, and anxious to beat not only their competitors but themselves. "Beat our own record" is one of their mottoes, and an uncommonly good one. They are not content to stand still and maintain a position, they want to improve it. There is something of this feeling in England, but it is confined to golf, pheasant shooting, or cricket. A man is intent on beating his own record in these and similar pursuits, but in business he is content to let the old record stand. This is only another way of saying that play is our work. A more essential difference is embodied in another American motto—"Don't grumble, boost".[1] The English are inveterate grumblers; they make the worst of

[1] "Boost" is good American and a useful word. It is used both as a verb and a noun: "I boosted him up," or "I gave him a good boost". The meaning is much the same as "shove up," but it has also a sense of making the best of things and putting a good face on them.

everything. Things are always going to the dogs; some business or class or section of the people is always in a desperate state and doomed unless prompt assistance is forthcoming from the Legislature or from somewhere. There is a good deal of mere habit about it; the grey climate gives Englishmen *le spleen*. But the habit of whining is not very healthy or manly, and the practice of asking for help enervates and demoralises. The buoyant self-confidence of Americans may be a little overdone, but it is a great source of strength. The Germans are different from both. They neither whine nor boost, and they do not trouble themselves about records, whether of golf or business. They plod along steadily and laboriously from point to point, partly because they are compelled by force of circumstances and partly from a sense of duty, which is still a great force with them. They have the habit of work by tradition and training, and they are compelled to develop their industries in order to support the growing population, on which the maintenance of their national position depends.

One method of boosting in America deserves particular notice, and that is advertisement. In this art Americans lead the world so successfully that no competitor is in the running. The English humbly follow at a respectful distance; no one else is in sight. The art is practised in innumerable ways: from dressing the shop window, of which I give some account later on, to the issue of Government returns which point out the progress made by the country in one thing or another, and explicitly state that the United States leads the world in this or that. Advertisement is undoubtedly a great and growing engine for promoting commercial success; its uses in the day of universal education, universal newspapers and universal com-

munication by electricity and steam, are unlimited. It is a proof of the supreme alertness of the Americans that they have grasped its significance and laid themselves out to apply it. But its development in America is also assisted by a very curious trait in that intelligent nation. I mean the toleration of shams. Like the toleration of unfinished work, with which it is connected, the toleration of shams is pervasive. It is illustrated in daily life by the pretence of a single class in railway travelling, by the use of such euphemisms as "help" for servant and "charity" for pauperism. It even finds permanent expression in the national palladium, the Capitol at Washington. That finely designed and truly imposing edifice is not guiltless; the central building is of coloured stone painted to look like white stone, and not devoid of cracks; and the dome is iron, which is to say, it is not a real dome at all. Something more than toleration, almost an affection, for shams is shown in the encouragement given to every kind of imposture and quackery. America is the land above all others where everything which appeals to credulity and ignorance flourishes. It is there that the new religions arise, and, no matter how impudent the pretensions of their founders, they meet with thousands of infatuated believers. It is there that the medical quackeries, the patent foods, the beautifiers and all that gallery flourish most. They advertise to an incredible extent. I took the trouble one day to count the quack advertisements in the chief morning paper published in the most intellectual city in the States. There were sixty-three thus divided :—

Drugs and treatments	33
Beautifiers	11
Fortune-telling	10
Foods and drinks	9
Total	63

A few among them may have been genuine, but most were obvious impostures. Among the medical ones a large proportion were of the kind known as "indecent," very thinly veiled. In little local papers I have seen fully three-fourths of the printed matter consisting of these advertisements, published not only in that form but as news and letters to the editor. The impudence of some reaches the sublime. I remember one which ran something like this :—

"I do not profess to cure rheumatism, or bronchitis, or any single disease. *I cure everything.* I have discovered the source of life itself, and bring back from the grave."

We have them in England, it is true, and they are growing. Many come from America, which is undoubtedly conquering us in this as in other things; but as yet there remains a certain amount of prejudice against quackery. The last religious impostor was hooted out of the country, and other fantastic sects which have a great following in the States have only gained the adherence of a few idle persons in England. The medical and dietetic quackeries are less numerous with us, and their advertisements are mainly confined to periodicals which circulate among the most ignorant. I attribute the prodigious vogue of impostures in America to the boundless faith of Americans in their own country as the pioneer of civilisation and enlightenment, to the wide diffusion of superficial education and to the general contempt for the experience of mankind at large. They have no reverence for what is old and proved outside their own borders, and not much for that within them. I do not speak of the highly educated, the travelled and well-informed, who are a limited class, but of the mass of the people, who take no interest in other countries, who believe that they have nothing to learn from them and that all things are possible in their own new land.

This feeling amounts to a superstition which blinds their intelligence. The same contempt for other countries characterises the bulk of the English people and is called insularity; but the Americans are even more insular, and their contempt for experience is not shared by the English, who err rather in the opposite direction and are in many things too obstinately conservative. This quality has its drawbacks and tends to dullness, but it saves from running after a good many false gods, whether in religion, in legislation, or in what is called "science". Perhaps the last is the most fashionable field just now, and as an instance of the lengths to which American self-confidence will go, I may mention that there are some ladies who not only agree with Sir Thomas Browne in wishing that children could be produced, like trees, in some other way than that prescribed by nature, but are seriously engaged in experiments for producing them. Such fantastic nonsense would hardly be possible yet in England, though we shall probably come to it with the progress of education. As for the Germans, shams and impostures of any kind stand a very poor chance before the deliberate and logical habit of mind which they bring to bear on all questions. Medical quackeries are probably forbidden by law, at any rate very little is to be seen of them, and religious ones soon have notice to quit. In other matters they are equally intolerant of shams and insist, to the point of pedantry, in calling things by names which indicate precisely what they are. These national differences find expression in a matter which has a direct and important bearing on the conditions of industrial life. I mean the observance of the law. In Germany, laws are made to be kept, and to that end they are very carefully made. In England, they are less carefully made and correspondingly ill-observed, but obvious shams are not

openly tolerated. In the United States, the general contempt for law is astonishing. I am inclined to think it is the most salient feature of American civilisation. I know exactly the opposite impression prevails there, and it is assumed as an axiom that Americans are law-abiding far above all other people, because law represents to them "the majesty of right, not the tyranny of might". That is a fine phrase, but belief in its reality is an illustration of the national toleration of shams. The tyranny of might may be exercised by a majority as well as by an autocracy. This truth is implicitly recognised by a conference of American churches in an address to the Archbishop of Canterbury, dated 7th November, 1904, which complains of the oppressive character of the recent English Education Act, although it rests on the same principle of the "majesty of right" as laws in America. Some persons in England undoubtedly think it oppressive and have refused to obey it. In the same way oppressive laws in America are not obeyed; they are evaded or defied. And I know no country in which laws that interfere with the liberty of the individual are so common. They are of a sumptuary character and intended not for the protection of the public and the maintenance of order but for the promotion of morality. In some States, for instance, kissing is a penal offence, in others, the giving of tips. Laws like these cannot possibly be enforced. The more stringent of the liquor laws are of the same character; and I believe these and the like enactments are largely responsible for the general contempt for law which pervades American life. I should hesitate to make this deduction from my own knowledge, but it is recognised by very competent native observers. For instance:—

"There have been concomitant evils of prohibitory

legislation. The efforts to enforce it during forty years past have had some unlooked-for effects on public respect for courts, judicial procedure, oaths and law in general, and for the officers of the law, legislators and public servants. The public have seen law defied, a whole generation of habitual law-breakers schooled in evasion and shamelessness, courts ineffective through fluctuation of policy, delays, perjuries, negligencies and other miscarriages of justice, officers of the law, doubled-faced and mercenary, legislators timid and insincere, candidates for office hypocritical and truckling, and office-holders unfaithful to pledges and to reasonable public expectation."[1]

Lynching is, of course, the stock illustration of lawlessness, but it hardly seems to me a fair one, because the racial antagonism to which most of it is due is a unique condition; and other cases generally take place in remote communities where the executive is probably somewhat inadequate to the maintenance of order, if I may judge of my own experiences in the model city of Washington. One evening I visited an elderly man who had a special knowledge of trade-unionism. He kept a small shop with a pool-room behind, in which some youths were playing. We talked in the shop while they played. When they had finished their game they began to interrupt us by making a noise and eventually throwing things down on our heads. The old man tried to stop them several times and begged them to be quiet, but they "only did it the more". At last I had had enough and got up saying audibly: "Why don't you kick these cubs out? If you don't care to do it I shall be delighted to do it for you." That had the desired effect; they slouched out and he put the lights down. I

[1] *The Liquor Problem in its Legislative Aspects*, Committee of Fifty, p. 5.

said, "Why do you stand it? Why on earth don't you call in a policeman?" "Police!" he said bitterly, "there *are* no police. You've got to put up with things here." I could not help feeling that a little lynching in the shape of a broken head or two would have met the case, and am therefore not disposed to be hard on those who take the law into their own hands in a country where it cannot be relied on. Roughs are to be met with everywhere, but these were not roughs, they were respectable youths; and though young men of any class will at times make a nuisance of themselves anywhere, I know no other civilised country where a man is bound to put up with it. The incident was trivial in itself, but the spirit of lawlessness displayed, which I have only faintly indicated, and the helplessness of the poor man were new experiences to me, though I have wandered far and wide for a good many years. I have observed many other signs of the same spirit, which culminates in murder with impunity in the open streets, sometimes by persons occupying prominent public positions. The number of reported homicides in the United States in 1900 was 1,829, or, roughly, 1 to 40,000 of the population; in England, in the same year, it was 278, or about 1 to 110,000. The American returns are probably incomplete, but taken as they stand they show an enormous difference. Homicide is nearly thrice as frequent in the United States as in England. Part of this must be attributed to the foreign element, and that explanation is usually offered, as it is for most unpleasant facts in the States; but the *Philadelphia Record* has pointed out that "lawlessness and acts of violence are most common in those States where there is the least admixture of foreign population. The really dangerous classes in this country are not imported; they are natives." I have failed

to discover any returns which would enable one to apportion the responsibility; but I have no doubt whatever that the social atmosphere of the United States encourages the natural tendency of some foreigners to violence and conduces to general lawlessness. I have felt it myself, having observed the conduct of others and having been instructed in the art of evading particular laws.

The special form of lawlessness which has the most direct bearing on industrial conditions is the evasion of factory laws, building laws, and the like, intended for the protection of the public or of particular classes. Here corruption may also come in as the handmaid of lawlessness, and the state of things cannot be attributed to the foreigner—it is quite American. Sometimes a public disaster, such as the Chicago theatre fire or the burning of the *General Slocum* steamship, draws attention to the disregard of the law. In other matters, such as the reporting of accidents or the employment of children, illegalities only come to the notice of those who make a special study of the subject. The States appear to vary as much in the observance as in the enactment of laws, but it is never safe to assume that because laws exist they possess even a fair degree of validity, as can be assumed in most European countries. They may, and in some States do, but in others they practically possess no validity at all.

Another point I have to mention in these general international comparisons is one in which Germany and America have the advantage over England. There appears to be, in both, a more general demand for information on industrial, social and, indeed, on all serious subjects. At any rate there is a much better supply, and I infer that it comes in response to some demand. It comes from both

official and from private sources, chiefly from the former in America, but more from the latter in Germany. With regard to official information the only subjects in which England decidedly takes the lead are vital statistics and public health. In these fields the United States is deplorably behindhand. It has, in fact, hardly any vital statistics worth the name except in Massachusetts and Rhode Island, and they are far from perfect. Those of Germany are very much better but not so complete as the English ones. The United States, however, makes up for this deficiency by the extraordinary fulness of information available in other fields and the unique liberality of its distribution. The Census alone is an amazing and bewildering production. I never look at it or think of it without paying a tribute of astonished respect to those who conceived and executed it. Fourteen volumes on a scale considerably larger than the *Encyclopædia Britannica* stand on my shelves, and others appear to be still coming out. That is the Census of 1900 (the 12th). It is surely by far the greatest statistical compilation ever conceived. Then there are the admirable annual reports and periodical bulletins issued by the Department of Labour (now a "Bureau" in the Department of Commerce and Labour) and edited by the Commissioner of Labour, Mr. Carroll D. Wright, who combines width of grasp with minuteness of knowledge in an extraordinary degree. They form a library of special inquiries. The reports issued by the Education Department, of which Dr. William T. Harris is the present Commissioner, are no less valuable. Both these sets of publications are packed with solid information, and others are issued by other Departments. Then several States collect and issue information of a similar kind. Conspicuous among them is Massachusetts, which

publishes a labour bulletin invaluable to social students. The English official reports and publications are good, but they contain very little information outside the official routine. An exception is formed by the excellent consular reports of the foreign office and the special reports of the Education Department, but the latter are too much given up to enormously long and discursive essays and too little to facts. However, they reveal an increasing interest in serious information, and a growing appreciation of special inquiries. But official publications are not necessarily a guarantee of public interest, and in England "blue-books" are very often still-born. The public demand for market books and periodical literature of an informing kind is a better guide. I am not sure how England stands in this respect in comparison with the United States, but my impression is that the demand is far greater in the latter. About Germany there is no sort of doubt. The official statistics will, on the whole, compare very well with those of England and the United States, though the lack of a more frequent occupational census[1] is a defect, but it is in non-official publications that Germany is pre-eminent. One is rarely at a loss for some compilation containing just the information required. I do not speak of abstract discussions on the "ismus" of the moment, which is the nightmare of the German mind; they are poured out like water and are often worth no more. I speak of facts. For instance, my first act on finding myself in a strange town is to buy a map. In Germany I confidently step out of the railway station, turn down the first street of shops, find a bookseller's within a hundred yards and get a capital map with a little book telling me the main facts about the

[1] It is only taken at long and irregular intervals. The last was in 1895, the previous one in 1882.

place for a shilling. The quest rarely fails even in towns of 20,000 or 30,000 inhabitants; in England it rarely succeeds in ones five or ten times as large; in America still more rarely. They do not seem to have much use for maps. Again, compendious handbooks on such matters as law and administration are always forthcoming in Germany. One such book—Graf Hue de Grais' *Handbuch der Verfassung und Verwaltung* is a veritable miracle of exact, concise and luminous information, brought continually up to date, and the Gutentag'sche *Sammlung Deutscher Reichsgezetze* fills in the details in a masterly fashion. We have nothing like these and others of a similar character, nor like Schmoller's *Jahrbuch*, Neefe's *Statistisches Jahrbuch Deutscher Städte*, and many more. There must be some demand for these things, for they are expensive to produce. I doubt if any English publisher would look at them. There are gaps, it is true. Very little information is obtainable on the subject of wages and hours of work, which has been officially handled in such enormous detail in the United States. On the whole, however, I must give the first place to Germany and the second to the United States. In both much more concern for serious things is manifested than in England.

A factor which exercises an influence second to none upon national qualities is domestic and family life. But it is delicate ground and I hesitate to tread upon it. For reasons already pointed out a real inside knowledge of family life in another country is hardly possible, and the individual's range of observation even in his own is very limited. But the matter is too important to be passed over and certain points are so strongly marked and so generally recognised that some broad distinctions can safely be drawn.

The position of women is very different in the three

countries, partly by design and partly by accident. Once, more the sharpest contrast lies between Germany and America. The former leans upon tradition, experience and the physiological distinction of the sexes, which assigns to them different spheres of activity; the latter defies tradition and physiology alike and insists on a theoretical equality. But this equality is not maintained; it is overthrown by the accidental fact that in the United States women are in a minority. The law of supply and demand consequently gives them an effective advantage which the theory of equality enables them to utilise to the full. The demand being greater than the supply they can make their own terms. This is very curious and it shows the vanity of repudiating Nature. For the sexual distinction, which is denied by the theory of equality, re-asserts itself, and with the help of the theory once more overthrows the equality but on the opposite side. The position of the sexes is reversed. In Germany women are "subordinate," that is they take orders from men; in America they are dominant and give orders to men. This does not mean that they exercise no sway in Germany and submit to no orders or rule in everything in America; it means that in many things concerning the common life what is settled by the fiat of the man in Germany is settled by the fiat of the woman in America. To use plain American, in the former country the man is the boss, in the latter the woman. Let me give an illustration. A member of a manufacturing firm, a youngish man, having very kindly shown me over his mill, said he would leave me with the manager as he had to go out. His wife was waiting for him. As he was leaving he said to the manager: "I am not sure whether I shall be back or not". "He will not be back," said his wife quite simply but with an accent of

certainty, as pertaining to the predominant partner whose word was final and admitted of no argument. He made no reply, and they went. "She is the boss," said the manager, who happened to be an Englishman, "the women are the bosses here." That, I believe, is universally recognised. The fact was put forward to me by an American in explanation of the singular fondness for societies with romantic names and fancy ceremonies in America. They are extremely numerous. "Knights" of this and that—Pythias, Columbus, Sherwood Forest, Honour, even Labour—are very popular; then there are Sons of St. George and other heroes of chivalry. Struck by the number of these institutions I asked the reason. "Well," said my friend, "they like dressing up and that sort of thing; it gives them a chance of doing a little bossing which they are not allowed to do at home." Women have similar societies of their own, and the vogue is explained by their craving for social distinction,[1] which means bossing other women.

In England the position of women comes nearer to the German than the American model, though the movement is all in the latter direction. They are less submissive than in Germany, but on the whole distinctly subordinate to the men and with no pretensions to the sort of domination exercised by American women. Those who decline to accept masculine supremacy seldom marry. As a rule wives like to submit to their husbands, daughters to their fathers and sisters to brothers; they like a masterful man. One occupying the position common in America is called "henpecked" and is not admired.

The result of these differences may be put in this way. The ideal wife is, I suppose, at once a helpmeet and a stimulus. In Germany the helpmeet character predomin-

[1] *The Social Unrest*, by Graham Brooks, p. 234.

ates, in America the stimulus. Each exercises a powerful influence on the national life. No single factor contributes more to the strength of Germany than the domestic character of the women. The houses are well kept, the children well cared for, the income expended to the greatest advantage. Among the working classes these things go a very long way to neutralise the disadvantages of lower wages and inferior housing. In all classes they are an immense help to the man. In America, on the other hand, the feminine stimulus is a great incentive to that strenuous application and restless enterprise which stand out so strongly in contrast with European sluggishness. Both characters have their weak points; the helpmeet is liable to be blunted to a drudge, the stimulus to be sharpened to a goad. Of the two the latter is the greater evil. The spoiling of women in America, though it makes the men work, is not so good for the women themselves; it fosters an exacting disposition, extravagance, love of admiration and amusement, and a distaste for domestic duties which most seriously threatens the national vitality. And it reacts on the men, who console themselves elsewhere for exactions submitted to at home.

As for England, the position of women, which accentuates neither of the two characters, is perhaps more favourable for their union. The ideal may be realised in any country, and far be it from me to suggest that it is not, either in Germany or in America; but the best type, which is more honoured than the *Haus-frau*, more loved than the over-exacting *domina*, and which wields more real influence than either, has a better chance of being produced where women are neither too submissive nor too domineering. On the other hand, I am afraid that the type more often produced in actual life is neither helpmeet nor stimulus,

but lacks the solid virtues of the one and the brightness of the other. We certainly have a class of women already numerous, and probably increasing, who are a source of great national weakness. They are ignorant, idle, extravagant and self-indulgent. They neglect their children and their homes, they drink and bet; and they exist in all ranks of society. The wretched appearance of so many working class homes and children, which constantly horrifies visitors to this country, is quite as much due to this type of woman as to the self-indulgent man who matches her. Neither in America nor Germany nor in any other country that I have seen do women drink and bet as they do here.

A very curious thing in the United States, which constantly strikes English visitors, may possibly be connected with the habit of being bossed at home. (The American word best expresses an American thing.) I mean the toleration of bosses in general, political, economical and social. Americans submit to oppressive conduct with a meekness which astonishes Englishmen. A small incident will illustrate the point. When I was in Columbia (South Carolina) the morning train to Charlestown, which is to Columbia very much what Glasgow is to Edinburgh on a small scale, was held back one day for two and a half hours because the son of the President (Chairman) of the railway company wanted to make the connection. There were men of business, lawyers who had to be in court, and other passengers with serious interests on the train; they lost their day and went home. Traffic is sometimes a little disarranged in England for royal trains, but such an incident as this is inconceivable; the public would not stand it. The railways are great sinners, and the feudal sway they exercise is reflected in the haughty demeanour of their re-

tainers, who habitually treat the travelling public as the men-at-arms of a noble lord used to treat the rabble a few centuries ago. Even the coloured attendant, though he never fails to protrude his claim to a tip and is extremely civil in other menial capacities, borrows an air of superiority from the railway and becomes a small autocrat on the cars. Among other licensed oppressors the very wealthy are conspicuous. They seem to do just what they please. At Newport, the principal watering place on the coast between New York and Boston, they have practically annexed the foreshore for miles in one direction. It can only be reached by going through their gardens, which occupy the edge of the cliff in a continuous line. Yet no people have a higher spirit than citizens of the United States; few have one so high. I can only explain their submissiveness to the innumerable bosses who oppress them by the habits learnt at home, or perhaps at school. It is noteworthy that in matters in which women are keenly interested, the position is reversed; individuals do not oppress the public, but the public, or what appears to be the public, oppresses individuals, as in the numerous legislative restrictions of personal freedom, which are usually engineered by feminine influence. It extends even to opinions, for there are subjects on which people dare not say what they think, as recent American writers of weight and standing have pointed out. This is tyranny indeed. I know no country in which there is so much license for the evildoer and so much interference in a petty way with the personal freedom of the innocent.

But it is time to bring this chapter to a close. I will do so by answering a question which may occur to some readers. How is it that such a sharp line can be drawn between America and the two European countries in

regard to national qualities when there is such a large and constantly renewed admixture of Germans and British in the States? The answer is well known. Americans pride themselves on few things more than on the capacity of the great Republic to absorb, assimilate and americanise the Europeans who migrate thither. It does in fact do so, just as England has done the same thing for centuries, not on so large a scale of course, nor so deliberately and systematically. In America, it is true, there is so much room that some nationalities are able to form corners which keep to themselves to a considerable extent, maintain their language and habits and intermarry little with other nationalities. Apart from New York, which is an *omnium gatherum*, and other trading or manufacturing centres which provide a labour market near the point of entry, the immigrant races tend to seek those parts which possess a climate most like that of home, and there they form settlements which grow by accretion. For instance, Louisiana has more Italians than any other Europeans, Minnesota has more Scandinavians, New England more Canadians; Finns and Hollanders go north to Michigan, Spaniards south to Florida, and so on. The British are the most evenly distributed, and the most fully assimilated, and after them the Germans. There is no doubt that both become rapidly americanised, and are sometimes more American than the native-born. It is curious how English workmen in particular throw off their old habits in the course of a few months and fall into local ways and the local spirit. I have no doubt at all that climate, which is the great standing condition influencing customs and character, is a powerful factor in this transformation. But there is a spirit in the air which is not all due to climate—the spirit of endeavour, of expansion, of

belief in a great destiny in which every individual shares. It is an inspiring atmosphere and does not fail to affect even the adult immigrant. But the instrument by which assimilation is most systematically effected is education acting on the children, who are regularly taught pride in American citizenship, the glory and splendour of patriotism. That is a great thing.

CHAPTER II.

INDUSTRIAL DISTRICTS IN ENGLAND.

In a sense manufacturing countries and manufacturing districts in them are born, not made, if one may use the expression. It is true that in every country industries are carried on and are widely distributed. Apart from hand trades, which are ubiquitous, some manufactures are to be found in all large centres of population, and capital cities are generally the seat of many. But there is a tendency to concentrate the leading branches of manufacture in particular areas which form more or less specialised industrial districts. Such concentration is due to one or more of three primary causes—proximity to (1) raw materials, (2) power, (3) a market or facilities for transport. A secondary cause which comes into operation later but is hardly less important, is the possession by the local population of special skill, handed down from one generation to another and acquired at an early age. It explains the tendency of a skilled industry, established in a particular spot for primary reasons, to remain and grow in that spot after the original reasons have ceased to exist. The district known as the Potteries in Staffordshire is a notable instance. Other conditions, such as a peculiar atmosphere favourable to particular processes, assist in promoting the same result. Thus we see that the concentration of industries in certain localities and the growth of such centres are not accidental or arbitrary, but are dependent on physical laws. Indus-

trial districts become so by reason of natural advantages—a fact which does not seem to be fully realised by the promoters of "garden cities" and the like projects.

It is difficult to say which of the factors enumerated—the supply of raw materials, power, transport or competent labour—is the most important; but undoubtedly the most favourable position is that in which all are combined. That is pre-eminently the position enjoyed by the great manufacturing districts of England. Nor is their superiority necessarily threatened by the disappearance of some of their original advantages. If the primary causes of industrial development be examined a little more closely it will be noted that a change is in progress, and that the first two—proximity to raw materials and power—tend to diminish in influence and to be replaced by the growth of transport. Ocean carriage, in particular, constantly increases in importance and takes the place of local supplies, which may become inadequate, diminished or exhausted. This fact, which has already exercised a potent influence on the commercial as well as on the industrial development of England, will probably be still more potent in the future. I cannot here pursue the economic aspects of the subject, though much tempted to do so, for some economists appear to set the carrying trade of the country over against the manufacturing interest, whereas the two are directly dependent on each other and will become increasingly so. What I am at present concerned to point out is that the accessibility of our industrial districts to ocean transport, by reason of the small size and island position of the country, is an advantage of permanent and increasing value which might even make good the exhaustion of coal, as it already has that of iron, and as land transport has made good the local exhaustion of both. I have already mentioned the

Potteries. Another of the great industrial districts of England, to be presently described, is the ring of metal-manufacturing towns round that singular area known as the Black Country in South Staffordshire. The original causes of their development were the proximity of raw material—iron and coal—in that area. Now it stands desolate, worked-out; but the towns around it and once dependent on it remain and grow. They get their supplies elsewhere.

Originally, I suppose, the most essential condition determining the seat of industries was the presence of water. It supplied power, transport, and, to a certain extent, raw materials, as for the washing and other treatment of textile fibres. Accordingly we find that the oldest established industrial centres are always situated on rivers or streams, and generally in a more or less hilly neighbourhood, which is often the seat of mineral supplies, as well as of clean running water. Later, coal became the chief source of power. The combination of water, coal and iron together is very strong, and if accessibility be added, it becomes irresistible. But even this combination does not exhaust the natural advantages of that wonderful industrial region in the North of England, the like of which the world has never seen and is not likely to see elsewhere. For it possesses certain atmospheric qualities which greatly favour the manufacture, both of cotton and of wool in special respects, and conduce generally to energy and vigour, both of mind and body. No wonder that with the development of steam power and machinery it became the "workshop of the world" and still remains unapproached. There are regions in the continents of Europe and America and some in other parts of Great Britain which are sufficiently remarkable; but none can compare with the area, made up

of contiguous portions of the counties of Lancashire and Yorkshire, that I am about to describe. No one, who has not travelled through and through it and studied its towns and villages, can have any conception of what the modern development of industry means.

Take a map of England and put your finger on Sheffield; then draw a line due north to Leeds and due west to Warrington; join these two by parallel lines which meet somewhere near Preston. The line from Leeds to Preston should curve a little to the north, so as to include Keighley, but otherwise you get a perfect parallelogram, containing something like 1,500 square miles. That is the great workshop of the world. It is 1,500 square miles of factories, mills and mines, and in an inner area lying between Bradford and Manchester they are practically solid. It is by nature a beautiful country, a land of hills and streams, of heath and wood. Some sections of it are still beautiful. On the Yorkshire side the moors come close up to the big towns. A few miles out of Sheffield, or Barnsley or Leeds, lie great tracts of open moorland carrying the finest grouse shooting in the world, and the pit villages are often set amid charming surroundings. The valleys of the Wharfe and the Aire provide Bradford with romantic suburbs, which show that it was once itself a romantic spot. Adjoining the Yorkshire border near Sheffield, and within our parallelogram, is the Peak district of Derbyshire, with some of the finest scenery in England. The Lancashire side is less fortunate, and towards Manchester it becomes frankly hideous; but elsewhere it is not devoid of hill and moor and meadow, and some of the big manufacturing towns have natural situations as charming as those of Yorkshire, though in a somewhat less romantic style. Taken as a whole, this manufacturing district is not only

by far the busiest in the world, but also the most naturally beautiful of all large industrial areas.

I do not know precisely what the total population is. That of Lancashire is (1901) 4,406,787, and that of the West Riding of Yorkshire, 2,746,867; making together, 7,153,654, which far exceeds that of any of the American States except New York, and nearly half the population of New York State is in New York city. The particular area defined, however, does not include the whole of Lancashire and the West Riding. I estimate its population to be somewhat over 5,000,000, of which rather more than half is on the Lancashire side. This statement probably gives very little idea of the dense aggregation of people. It can be better realised by scanning the following list of the principal towns comprised within the area, which is only fifty miles long and less than thirty miles wide:—

Town.		Population (1901).
Manchester	Lancashire	543,872
Salford	Lancashire	220,957
Bolton	Lancashire	168,215
Oldham	Lancashire	137,246
Blackburn	Lancashire	127,626
Preston	Lancashire	112,989
Leeds	Yorkshire	428,968
Sheffield	Yorkshire	380,793
Bradford	Yorkshire	279,767
Halifax	Yorkshire	104,936

Here are ten towns, each with upwards of 100,000 inhabitants, and containing an aggregate of 2,505,369 or an average of more than 250,000 a-piece. Half the population of the entire area is compressed into these ten great centres. The remaining half is distributed in a large number of others, some of which are but little smaller, and in innumerable villages scattered amongst them. There are Burnley (97,043), Huddersfield (95,097), Rochdale

(83,114), Stockport (78,897), Warrington (64,242), Wigan (60,764), Bury (58,029), Keighley (41,564), Wakefield (41,413), with Stalybridge, Dewsbury, Shipley, Todmorden, and many more which it would be tedious to enumerate. Along the principal railway lines they are practically continuous. There is nothing approaching to it even in Saxony, where the towns are separated by long stretches of pure country. It may not be anything to be proud of; I am not sure whether it is or not, but the fact is worth noting that everybody is proud of it. We hear much talk of "back to the land," "garden cities," "rural settlements," "the simple life," and so on; but if we look at the facts we see that in every country nothing excites more popular pride and satisfaction than contemplating the growth of cities and the aggregation of people in them. The extension of the area covered by bricks and mortar and the increased number of people massed in them is always proudly quoted as the first and incontrovertible proof of local progress. Everybody does it. I daresay Mr. Ruskin would have done it himself if he had had to make a speech on the opening of a municipal picture gallery. And it is undeniably true that if there were no towns there would be no public picture galleries or similar encouragements of fine art. Venice and Florence are towns, created mainly by commerce, and so was Athens itself. Sheffield, one of the most flagrant examples of all, is actually the home of the Ruskin Museum. So strong is this feeling that I remember one of those titled ladies who when tired of gaiety find occupation in projects of social "reform," expatiating in consecutive sentences on the benefits of rural life and on the satisfactory progress that the rural communities in which she was interested were making towards growing into towns.

In this corner of England, made up of sections of Lancashire and Yorkshire, the process may be seen in all stages, from the mighty roaring mart of Manchester down to the tiny village which has been invaded by a single mill or has grown up around it. Those who cry "back to the land" and advocate the removal of industries to the country do not seem to be aware that it is perpetually going on. Factories are constantly being put down in country places. All about the great towns I have enumerated are such places; quiet and sometimes charming villages, where there is a mill or two and hard by a few rows of entirely excellent cottages for the work-people, co-operative stores, a reading-room, and the like, with a minimum of public-house accommodation. Almost ideal in a plain way. And what happens? The ideal village makes all the haste it can to grow into a town and to imitate other towns, and everybody congratulates it on the rapidity of its progress. Eventually we have the familiar tale: So many years ago this great city was an insignificant village with a few hundred inhabitants; now it has so many hundreds of thousands and covers so many square miles. Such details are recited with profound satisfaction, and the new town hall, which has cost a fabulous sum, is opened by royalty with all the pomp that can be raised for the occasion and amid every sign of popular rejoicing. Everywhere and always it has been the same, from Babylon to Chicago; mankind loves the town, whatever sages may say, and contemplates it with unfailing delight. On sages themselves it exercises an irresistible attraction, and they generally spend the greater part of their time in the middle of it. Judged by this standard Lancashire and Yorkshire have much reason for self-congratulation. Nowhere has the human race piled up so many great towns within the

same area. They are worth some study. But in spite of the pride inspired by their magnitude, they have a bad name and are shunned. No one goes near them save for business or to visit friends, and those who go for business stay as short a time as possible. The guide-books dismiss them with the scantiest notice, and the few novelists who lay their scenes in them paint them in the gloomiest colours. Well, they are not health resorts or storehouses of art, or rich in scenery or architecture. With the exception of a few small places, such as Oxford, Cheltenham, Leamington, and some on the sea-coast, English towns are sombre and dingy; and the manufacturing ones are for the most part more sombre and dingy than the rest. They are far more so than those on the continent of Europe or even in America, with certain notable exceptions. Nor have they much historical interest in the ordinary sense. But they have an overwhelming human interest incomparably more actual and vivid than that of the sight-seeing round, and, in a sense, more satisfying, because more defined and intelligible, than that of the huge kaleidoscope presented by a great modern capital. For reasons already given the capitals are not included in my survey, but some note must be taken of them, if only to indicate how far they are representative or the reverse, and this will be the most convenient place for the few remarks I have to make about London.

London.

The great mistake that strangers make in every country is to generalise from too small an experience and in particular to judge the rest from the capital. Capitals vary; some are much more representative than others, but it is never safe to take features observed in the capital as typical

of the rest, and sometimes it is wholly misleading. But the mistake is constantly made, because many travellers never see anything but the capital. Americans often complain that Europeans judge them erroneously from New York, but they make the same mistake themselves on this side. I agree with them that New York does not fairly represent either the United States or the American people. Neither does London represent the United Kingdom, much less the British Empire. It does not even represent England. Indeed, if the native white population of the United States be taken, I am inclined to think that New York people and New York ways have more in common with the rest than Londoners and London ways have with rural England and the industrial North. The people appear to be of different breeds, with not less variation in temperament, character and custom than in manner of speech. That truly representative type of Londoner to whom the generic name of 'Arry has been given is not met with anywhere else. He gets his 'Arryness from London, and I regret to say that he is the most offensive creature on the face of the earth, except a certain type of Prussian officer. It is his delight, one might almost say his occupation, to be offensive; if he were not offensive he would not be 'Arry. He is the only person who takes it for granted that anything with which he is not familiar is necessarily ridiculous, and who freely expresses his ridicule. When he leaves home he ridicules everything he sees, particularly in a foreign country; when he encounters anything unfamiliar, such as a person clothed in a foreign or even a native rural garb, in his own streets, he treats it solely as an object of ridicule. He has nothing to learn save what can be learnt in London from his own familiar sources of information. His satisfaction with himself and his surroundings may not

really be greater than that of the corresponding American, who not only believes his own country to be far ahead of all others in everything, but is firmly convinced that the unfortunate inhabitants of other lands neither know nor can do anything. But the American counterpart of 'Arry is more amusing than offensive with his child-like self-glorification; he pities other people, and rather gravely tries to enlighten them; he does not lay himself out to wound their feelings with boisterous ridicule. That amiable habit is peculiar to 'Arry, and it does not make a favourable impression on strangers. It may be said that 'Arry is an excrescence, but I am afraid that he is a very large and deeply-seated excrescence. To tell the truth London is pervaded with 'Arryness, modified and refined according to circumstances, but in essence the same quality. And I do not find it elsewhere.

There is much else that is unfortunately peculiar in London. When the number of persons aggregated together in one spot passes a certain point, some of the problems of social life become so aggravated that they differ not only in degree but in kind. The ordinary limits of time and space are touched, and extraordinary efforts must be made to meet the difficulties that arise. That is the case with housing and locomotion which are closely associated; the conditions that occur in London are not found in any other English town. Nowhere are there such vast areas of grimy squalor, nowhere is locomotion so difficult. On the other hand, London has the best water supply of any great city in the world, and the best service of isolation for infectious disease (not even excepting Berlin); its public parks, play-grounds, squares, gardens and open spaces are unique for number, variety, verdure, extent, distribution and accessibility; its sanitation is extremely good and its death-

rate very low; its police force cannot be matched. Its main thoroughfares are mean and hopelessly disfigured by advertising signs and letters plastered over the houses; nevertheless it contains a larger number of fine, interesting and historical buildings than any town out of Italy. But above all other distinctive features London is an *omnium gatherum* that has no rival. It is the only capital that is at once the seat of government and of justice, the residence of the Court, the headquarters of all the institutions of State and of the Church, a great port, a great manufacturing place, the centre of intelligence, the centre of trade and finance, the centre of crime and vice, the centre of fashion and pleasure. All roads lead to London and everybody comes there; it is the goal of ambition and the refuge of the outcast. No one can judge England without London; but let no one judge England from it, and least of all the large industrial towns of the North.

To return to them, I think that pride of place must be given to Lancashire, which stands first among the counties of England both in textiles and in engineering and machinery, and also in the production of paper and glass.

The Lancashire Towns.

Manchester.

Manchester is the chief of them, but I am going to say little about it as a town, not because it is not worth more but because it is less suitable to my purpose than others, which are of a more purely industrial type. Manchester is undeniably a manufacturing town. It is the seat of many notable "engineering" works—the term is commonly applied to the manufacture of machines of all kinds and of many other mechanical appliances as well as engines—including one of the largest electrical machinery works in the

country. This is the British Westinghouse Company, an American concern. The works are new, on the same scale and the same plan as the Westinghouse Works in America, and are unsurpassed as specimens of modern workshops and workshop arrangement. The principal shop is 300 yards long and 150 yards wide, and a model for space, light, order and appointments. Then Manchester is famous for heavy machine tools, hydraulic presses and similar appliances, and for cotton machinery of all kinds. It also possesses many cotton mills and some of the finest spinning is done there. At the present time Manchester and Salford have about 2,750,000 spindles and 23,000 looms. Nevertheless the manufacturing element is completely overshadowed by the commercial. Manchester is to-day primarily a great business place; it is the central mart for the Lancashire manufactures and it draws to itself the trading element of the neighbouring towns, which have consequently assumed a purely industrial character. I do not know of anything quite like this, though the situation of Boston in relation to the manufacturing towns of Massachusetts somewhat resembles it. But then Boston is a port, whereas Manchester, in spite of the canal, can hardly claim that character. It is a place for buying and selling, and since Lancashire sends its wares all over the world (which Massachusetts does not), hither come buyers from all the nations. They do their business in Manchester and there the goods are warehoused.

The town has no doubt gradually acquired this character through its convenient situation and the development of transport facilities. It has an industrial history of great antiquity and is said to have been the seat of woollen manufactures before the time of the Romans, who established a station here, as the name "Manchester" implies.

Wool is the oldest of all the textile industries, and several of the Lancashire towns were famous for it many centuries before the introduction of cotton, which came from the Netherlands in the seventeenth century. The most ancient seats of textile products are always found on the banks of small rivers, which furnish the means of washing, bleaching and dyeing the fibres or fabrics; and no doubt Manchester owed its industrial beginnings to the unfortunate and ill-used river Irwell, which divides it from Salford. Its position was improved by Roman roads and its textiles by Roman skill. They continued to flourish in the succeeding centuries, and are mentioned at various periods in English history. As a textile centre it attracted the refugees driven from the Continent at different periods, and in turn derived an impetus from their skill and knowledge, notably in the use of cotton. It was not, however, until the latter part of the eighteenth century that the modern development of the old industrial centre began in earnest and transformed it in a comparatively short time out of all recognition. This was due to a remarkable series of changes, inventions and enterprises, which came hard on the top of one another.

The first in point of time was the construction by Brindley, for the Duke of Bridgewater, of the system of canals which gave Manchester cheap carriage of coal and cheap transport to Liverpool and elsewhere. The first part of it was opened in 1761, and was the beginning of that extensive system of inland navigation which did so much to promote commercial development by improving transit before the advent of steam locomotion and the railway. This enterprise was directly connected with Manchester, for it was undertaken with the primary object of bringing coal from the duke's collieries at Worsley. The same date marked the inception of mechanical invention on an un-

precedented scale and with unprecedented results. There is a great temptation to linger on this singular period in the history of mankind and to speculate on the causes of the outburst of inventive genius by which it was marked above all others. For genius it was, in the strict sense of that word, meaning original mental productivity, untaught, unschooled, coming whence and how we know not. It owed practically nothing to science and very little to education. It sprang from the soil, and that soil was pre-eminently, though not exclusively, the north of England. Brindley came from the peak district of Derbyshire, which falls within our industrial area. Of lowly, rustic origin he became a millwright's apprentice, and from boyhood displayed a mechanical and engineering genius of the purest type and of the widest range. Hargreaves, the first of the long line of inventors of modern textile machinery, was an illiterate Lancashire weaver. He invented the spinning-jenny (1767), and before that (1761) a carding machine on which all subsequent improvements were based. Arkwright, the efficient if not the first inventor of the roller spinning-frame (1769) was likewise a Lancashire man of equally humble origin. Crompton, who invented the spinning-mule (1779), and came from the same neighbourhood as Hargreaves, was the son of a very small farmer. Cartwright, to whom as the inventor of the power loom (1785), the textile industries owe more, perhaps, than to any of them, was a clergyman born in Nottinghamshire; but he, too, received the stimulus to mechanical invention from Manchester and the cotton trade. Henry Cort, who about the same time invented the puddling furnace and the rolling mill, on which the modern iron and steel industries are based, was another uneducated Lancastrian. The self-acting mule which came later (1830) was the invention of

Mr. Roberts, of Manchester. It is needless to insist on the importance of steam power in developing the use of all these machines. Its successful application to textile processes was gradually accomplished by many hands; but the chief credit again belongs to the Manchester district. Power looms were first set up successfully on a large scale at Pollokshaws in Scotland, but in 1835 Lancashire and Cheshire had four-fifths of the whole number in the United Kingdom.

The effect of this extraordinary series of inventions is seen in the rapid and enormous increase in the imports of cotton, which had been virtually stationary for a century. A few dates and figures will best exhibit the change effected:—

Year.	Cotton Imported.
1697	1,976,359 lb.
1764	3,870,392 „
1790	31,447,605 „
1800	56,010,732 „
1810	132,488,935 „
1820	151,672,655 „
1830	263,961,452 „

This immense expansion was largely assisted by the development of the cotton culture in the United States which followed the invention of the mechanical saw-gin by Eli Whitney in 1794. The production, which had been only 2,000,000 lb. in 1791, rose in successive decades to 48,000,000, 80,000,000, 180,000,000 and 385,000,000; and Great Britain, which in 1790 had obtained none of its cotton supply from the United States, took a constantly increasing proportion from that source. The fact is interesting at the present time, when attention is turned to alternative sources of supply, particularly within the Empire. It appears that in the year 1786 we imported about 20,000,000 lb., of which one-third came from our West Indian colonies, another third from West Indian colonies belonging to other nations, and the remainder from Brazil and the Levant.

The last great mechanical invention which contributed to the development of Lancashire, and in particular to the evolution of Manchester as its trading centre, was the steam locomotive and the railway. The town became a convenient market and exchange, easily reached from every direction, and the best meeting-place for manufacturers from the neighbouring towns, which accordingly transferred their warehouse business thither. The further factors in its evolution are, of course, ocean steam transport and contiguity to the sea.

This much explanation is necessary to give a clear idea of the growth of industrial Lancashire and the part played by the chief town. It is a very remarkable story, without parallel in the industrial history of other countries. By dint of native inventiveness, energy and enterprise, assisted by certain natural advantages, Lancashire became purveyor to the world of the most widely used and generally useful of all the textiles, although so far from the sources of the raw material. India is the original seat of cotton manufactures, and, so long as the industry depended on hand processes, Lancashire was quite unable to compete with the age-long traditional skill of the Indian hand-workers in producing the finer fabrics. Machinery changed all that, and England became an exporter of muslins, calicoes and other cotton goods to India, and to all other countries. The supremacy then won has never been lost, though it has been considerably diminished in recent years by the gradual acquisition of skill in other countries, and it is more keenly contested year by year. Some summary figures will show the relative position of the chief manufacturing countries according to the latest information :— [1]

[1] *Hand-book* for 1903, Comtelburo, Ltd.

Country.	Mills.	Spindles in Millions.	Looms in Thousands.	Consumption in thousands of Bales.	Hands employed.
Great Britain	2,077	50	720	3,270	530,000
U.S.A. . .	1,151	21	488	4,164	307,000
Germany .	390	8½	212	1,580	350,000
Russia . .	304	7	157	1,290	355,000
France . .	420	6	106	840	90,000
India . .	192	5	42½	1,765	181,000
Italy . .	500	2½	110	560	130,000
Austria . .	125	3¼	110	600	100,000

It will be noted that the supremacy of Great Britain is much more marked in spinning than in weaving. The number of spindles exceeds those of the United States, Germany, France, Russia, Italy and Austria put together; and nine-tenths of the 50,000,000 spindles are in Lancashire.

There are other manufactures of some note in the county—paper, glass, hats and watches, or parts of watches—associated with particular localities; but they are quite insignificant compared with cotton and cotton machinery. The latter is becoming almost more important than the cotton itself. Wherever textile industries flourish machinery works grow up, and those of Lancashire are pre-eminent. The makers of machinery do more than supply the mills, they build them; many of the newest mills furnished with the very latest machinery are owned by them. The fact testifies to the determination of the district to hold its own and adds stability to the trade, for as other countries develop the manufacture of cotton and compete in the production of yarn and cloth they become customers for machinery. After a time, no doubt, they begin to manufacture the latter also for themselves, and as they become self-sufficing they shut out the English machinery as well as the English goods. That is already happening in the United States and Germany, but other markets are opened elsewhere, and even in the States and

Germany the best spinning machinery still comes from Lancashire. As a general exporter of machinery of all kinds for the manufacture of cotton it remains without a serious rival. That is a cheerful reflection; but in view of the downfall of other English industries once equally supreme, and of the growing success of other countries in supplying their own textile machinery, it would be folly to expect this state of things to last indefinitely. No one can look around and note the progress, now steady and now swift, of competitors, along the track once trodden alone by England, without misgiving for the future of Lancashire, with that great population dependent on a single branch of industry; for if cotton and cotton machinery be taken away it is undone.

Meanwhile it flourishes exceedingly, and one aspect of its success, not to be missed, is presented by the great city of Manchester, to which I return. Together with Salford it has a population of considerably over three-quarters of a million. The two were once administratively and still are actually one, and without intending any slight to Salford we may perhaps, for convenience' sake, be allowed to speak of them together under the single name.

Strangers do not speak well of Manchester, and that is not surprising. It is not beautiful by nature or by art; it is wet and smoky. People say it is the smokiest town in England, but perhaps they do not know Sheffield or Gateshead. Still Manchester *is* very smoky and it is certainly very wet; the rainfall is far above that of London. Put the two things together and very likely the Manchester fogs are as bad as the London fogs; they may even be worse. The aspect of the place, it must be admitted, is gloomy and dull, and strangers never like those qualities; but residents mind them less, and the Manchester people

love and are proud of their dull and gloomy city. The reason is not far to seek. What most human beings like is companionship, life, things going on, the presence and stir and bustle of other human beings. That is why they love the town, a point on which I shall have something more to say presently. They get these things in Manchester to a pre-eminent degree. In the main arteries where the tide of life runs at the full, it runs with a roar and a stir and a bustle which are not excelled by any other town, not even by New York or London itself. And yet the place is not too large for corporate life and a sense of citizenship. Then the principal streets are well built and well kept, fairly spacious and handsome, and the shops are very good. There is a massive effect about the centre of Manchester which is not equalled by any other provincial town. The signs of trade are over it all—movement wealth and power. The streets are thronged with loaded drays rumbling along and impeding the quicker traffic to such an extent that I have counted twenty-eight electric trams all blocked in a heap. Many of the side streets consist entirely of tall warehouses, with bales swinging overhead in mid-air, ascending or descending all day long between the upper floors and the drays which stand lining the roadway below. This is the business of Manchester; the factory element is in the background. And there are the other accompaniments of trade—misery, squalor and vice. These are always found in great trading centres. I suppose that the handling of goods offers employment to unskilled labour and attracts incapables and failures. Also where there is much wealth there is much to be picked up casually from charity. Vice always abounds in such places. Buyers and sellers come from everywhere, strangers with money and leisure when business is over but no friends

or anywhere to go to. The hotels are full of them, and they want amusement. The amount of visible drunkenness in Manchester is very great. I have witnessed a painful scene quite early in the day and in one of the main streets between a drunken woman and her sobbing daughter —a tidy, well-dressed girl—who was trying to prevent her from entering a public-house with desperate earnestness, and in an agony of love and fear which rose far superior to the shame of publicity. It attracted some attention, but not much. The girl triumphed at length, aided by a workman and by fear of the law in the person of a constable, who gruffly bade the woman go home. It was the kindest and most effective thing he could do. They were all kind.

I am afraid this sort of thing is typical of England, and, undeniably, Manchester is very English. But the features I have mentioned—the business and bustle, the squalor and vice—are not all typical of the real industrial towns, which have neither the wealth and show nor the degradation of the trading centre. It is necessary to insist very strongly on the distinction, as a most erroneous notion of our manufacturing towns and industrial population is gathered from the trading places—London, Manchester, Glasgow, Liverpool, and the rest—which are far better known than such towns as Bolton, Oldham, Bradford and Halifax. Pauperism, vice and misery are much more rife in the former. The difference can be shown arithmetically by comparing the expenditure on pauperism in the two classes of towns, and to make the comparison entirely valid we will take the Lancashire towns only. The trading centres are Manchester and Liverpool; the chief manufacturing towns are Bolton, Oldham, Blackburn and Preston.

EXPENDITURE ON PAUPERISM PER HEAD OF POPULATION (1902).

	s.	d.		s.	d.
Manchester . . .	6	9	Bolton	2	2½
Liverpool	7	5½	Oldham	1	10½
			Blackburn	1	11
			Preston	1	6½

These figures eloquently demonstrate the fallacy of generalising from trading centres and assuming that the conditions which prevail there are common to the industrial population. They reflect a real difference, which is visible and palpable. I have dwelt upon Manchester for the purpose of emphasising the distinction, and for the same reason I shall not enter into further details regarding the conditions of life there, but will pass on at once to the manufacturing towns.

BOLTON.

Next to Manchester and Salford, Bolton is the largest town in the cotton district, and it is quite typical. There is no better field for the study of industrial conditions in England unless it be Oldham. It lies about a dozen miles to the north-west of Manchester in a region of considerable natural charm. It is a coal country; one is never out of sight of coal or factory chimneys all the way from Manchester, and of course the one accounts for the other. The old name, Bolton-le-Moors, which appears to have been dropped as the town grew into greater importance than all the other Boltons, suggests an open, hilly country; and in point of fact there are veritable moors at no great distance. At Rivington Pike, which is only half a dozen miles away, the hills rise to nearly 1,200 feet. It is the greatest mistake to suppose that these manufacturing towns are devoid of charm or that the factories totally destroy all the natural features of the locality. Bolton, with its undulating ground, little river and charming parks, is far pleasanter to look

upon than the great bare and glaring watering-places on the south coast in which so many people find delight. Of course the factories are there, and they are not objects of beauty, though less repellent than they are commonly represented to be. I shall have more to say about them and the town presently after noting some points in the rise and development of the manufactures.

The story of Bolton has already been implicitly told in the account given of the origin and growth of the cotton industry. It is itself an old seat of textile manufactures, probably going back to the time of the Romans. My own belief is that the Romans established manufactures in suitable places wherever they went, and that all the oldest seats of industry, both of metals and of textiles, in Europe were started or developed by them. Bolton was a suitable place, like Manchester. It had the necessary little river and grazing for sheep in the neighbourhood. Those Flemish weavers imported by Edward III., who are always cropping up in the early history of our manufactures, were sent to Bolton among other places; and of course they were sent there because it was a place where weaving was already carried on, but in a more primitive fashion. The foreigners were encouraged by the sagacious sovereign in order to improve the native methods, and therefore they were despatched to the localities where they would have the aptest pupils. Be that as it may, the place was already noted for its woollen products in the reign of Richard I., when an aulneger or official measurer of cloth by the ell was appointed for Bolton. The Flemings came there in 1337, and in later times refugees from the Netherlands and the Rhine, practising the same art, found their way to Bolton as one of the places where they could ply their trade and earn a living. As I have said, they brought the use of

cotton and taught the manufacture of fustians, a fabric made of mixed wool and cotton and originally derived from Spain. Bolton became famous for fustians and for coal, the use of which is mentioned as early as 1540. The manufactured goods were sold in the town, which had its own markets and conducted its own trade on the spot. The old picturesque warehouses, where business was transacted, have all disappeared, but some still existed down to fifty or sixty years ago. They consisted of three stories. The lowest formed the warehouse; the second was the place of business, it had shops and salerooms behind with a gallery projecting over the street in front and covered overhead by the top story which was thrown out and held up by pillars. With the removal of the market to Manchester, which followed the development of transport, the character of the town changed and the old picturesque element gradually vanished.

In the evolution of the cotton industry Bolton played a conspicuous part. Crompton was a native of the town and Arkwright lived there for some time, but the opposition to machinery displayed by the operatives, who were numerous and therefore strong, effectually delayed the adoption of the Bolton inventions in Bolton itself until they had been brought into use elsewhere, and the fight against the inevitable, which has always been waged with more dogged determination in England than anywhere else, was perforce abandoned for the time being. Then the cotton manufacture grew rapidly and the town with it. Steam mills, filled with machinery, sprang up and multiplied, and were followed by foundries and machine shops. The population of Great and Little Bolton, which had been 5,339 in 1776, ran up to 17,416 in 1801, and to 41,195 in 1831. Out of 8,209 families at that date, 7,288 were en-

gaged in "trade, manufactures and handicrafts". At the last census, seventy years later, the population of the borough was 168,215; and there were then, according to the local directory, 206 mills, with 6,250,000 spindles and 38,000 loooms; also 35 bleaching and dyeing works, 22 machinery works and 28 iron and steel works. Some of the latter must be small repairing shops, but there are two very large machinery and engineering works—Dobson and Barlow, who employ about 5,000 men, and Musgraves.

The speciality of Bolton is fine spinning, and the cotton used is largely Egyptian, which has the advantage of a long staple. The fineness of cotton yarn is reckoned by the length of thread contained in a "hank" of spun material weighing one pound, and is indicated by numbers technically called "counts". The unit is 840 yards. Thus a hank or pound of yarn, 840 yards long, is No. 1 count, one of double that length is No. 2, one of ten times 840 yards is No. 10, and so on. The greatest degree of fineness to which spinning has been carried is said to be 350 counts, such is the extreme tenuity of which the cotton fibre is capable. One pound of such yarn would reach 167 miles. In actual manufacture "low" counts usually run from 12 to 30, "medium" to 50, "high" to 100 or more, and "very high" to 250. It is in the production of the finer yarns that Lancashire chiefly maintains its superiority over other countries in spinning. This is partly due to the superior skill of the workmen, partly to machinery and partly to climate. In Germany they have not yet succeeded in spinning high counts, though they are gradually improving; in the United States at least two mills at New Bedford are successfully spinning very high counts, but it is with workmen and machinery from Lancashire. Very fine spinning is done on self-actor mules, and in the manufacture of these

machines the Lancashire makers are still unrivalled. With regard to climate, fine spinning requires a certain degree of dampness in the atmosphere, and this is said to prevail in a particular degree at Bolton, which has led to the specialisation of the fine spinning industry there. New Bedford which lies on the coast of Massachusetts, is said to possess the same atmospheric quality in some degree. To a considerable extent it can be artifically imitated by the use of mechanical sprinklers, which scatter a fine spray into the air of the room. They are universally used in Germany, and German experts inform me that they can successfully cope with the atmospheric difficulty in this way. If that be so, they have only to acquire the requisite skill in order to compete, and they are steadily aiming at it. The machinery they can procure from England until they are able to produce their own, which they will certainly do at no distant date. At present the machines taught in their technical schools, both for carding and spinning, are by Lancashire makers, such as Howard and Bullough (Accrington), Platt (Oldham), Asa Lees (Oldham), Dobson and Barlow (Bolton), Hetherington (Manchester), and Threlfall (Manchester); but for other processes, and notably for weaving, they make their own. America seems to me to be following the same course, and in some respects to have advanced further. The machinery makers have greatly developed the use of the ring spinning-frame, and Lancashire spinners in the States inform me that the American ring spinning-frames are lighter and superior to the English ones. The Northrop automatic loom has also put them at a temporary advantage in regard to the production of cheap cotton goods, particularly in the Southern States.

I return to these points later in the chapter on "Factory Premises and Plant". They are merely mentioned here as

signs of the times bearing on the Lancashire trade. They go to show that even Bolton, with all its advantages, cannot rely indefinitely on its present superiority in the production of fine materials. The general course of competition in newly developed manufacturing countries is to begin with the simpler and cheaper products and gradually to work up to the finer. That is undoubtedly happening in the cotton industry. Up to now Bolton is able to defy competition, and a striking proof of it came under my notice. In the looms of Barlow & Jones I saw being manufactured the cotton outfit for the very newest and largest of New York hotels. The maintenance of this superiority will depend on the amount of energy put into the trade, and happily there is every sign that it will not be lacking. The manufacturers fully recognise the necessity of keeping abreast of the times, and nowhere are the factories more up to the mark.

The town wears an air of marked and general prosperity. It has been selected by more than one writer for description as a specimen of the miserable conditions of life prevailing in the cotton country, but whatever may have once been the case Bolton is a cheerful place to-day. I have said that the mills are not things of beauty, but they are cheerful. In Lancashire they are built of bright red brick and have usually four stories. They are larger than the German mills, but very much smaller than many of those in America, which nearly always combine spinning and weaving, whereas in Lancashire weaving is carried on in sheds on the ground and lighted from the roof, as in Germany. The spinning mills are separate and a great many firms carry on that business alone. The newer mills look spick and span, and are, as a matter of fact, very clean and well appointed, though there is no attempt to give

them any sort of decorative appearance. The chimneys not infrequently bear the name of the mill in tall white letters. When lighted after dark the long rows of windows look very bright and cheery. A large Lancashire mill will run as many as 90,000 spindles, but I have seen one in South Carolina which has 100,000 spindles and 2,400 looms under one roof.

The interior of one of these great buildings presents an animated scene which has nothing dreadful about it except to those who think it dreadful that anybody should have to work at all. The operatives do not think so. They are a cheerful race, and, provided they have good employment and are fairly treated, they enjoy life incomparably more than those who pity them. In Bolton it is only fair to say that the trade unions, which are extremely strong and well organised, give the employers a very good name. "We mustn't make any complaints against the employers," said one official to me; "they are unanimous and always willing to investigate complaints, whether about sanitary matters or anything else." I shall have more to say on this head in dealing with trade unions, but I quote the opinion here to show that I have some warrant for taking a less gloomy view of life in a cotton town than conventional denunciations of the "factory system" may have led the reader to expect. I say the people in the mill are cheerful and have no reason to be otherwise. I have repeatedly heard the women singing, even amid the deafening roar of the weaving shed, in which conversation is impossible. The spinning mill is less noisy though the incessant clatter of machinery there, too, is a little disconcerting to unaccustomed ears. The atmosphere is nowhere bad, but in the spinning-room it is apt to get excessively hot. That is the choice of the spinners who can make better work in a high

temperature. The self-actor minders work stripped to the waist and with bare feet. Theirs is the most skilled and the hardest work, and they address themselves to it with an intentness and an absorption which are not surpassed by any workmen anywhere. The slackness with which English workmen in some trades are justly charged cannot be alleged against the Lancashire spinners, who are proud of their skill and with good reason. The work of the mule spinner is to mind the self-acting mule, and it demands all his attention to see to the threads and join those which may break. His earnings depend on his watchfulness and dexterity. Under the Lancashire system of working a spinner with two "piecers" to help him will mind a pair of frames carrying 2,600 spindles. He walks along them continually as the frames run out and back, instantly perceives a spindle which has stopped and with a rapid motion of the hands picks up the ends and joins them, walking forwards or backwards with the travelling frame as he does so. This is not an easy task; it must be learnt from boyhood. But the earnings are good. Wages are regulated by an agreement between employers and employed, which is modified by mutual consent as occasion arises. I have particulars of twenty-six Bolton spinners. From January to August, 1903, they averaged £2 4s. 6d. a week net, including the Easter and Whitsuntide holidays; the week is fifty-five and a half hours. Seventy years ago the net average earnings of spinners were £1 4s. 8½d. a week.

In the other rooms, in which the preparatory processes are carried on, there is nothing to complain of in the atmosphere save a certain amount of dust in the carding room; nor is the work very exacting. The great evils of excessive dust and floating cotton fibre, which used to come from the

raw wool in the first stages of manufacture, are now obviated by improved machinery. The children in the mill look bright and alert, particularly the little boys employed as "doffers," whose task is to take the full rolls of finished yarn or "cops" off the spindles and to put fresh cases in their place. They take great pride in the speed with which they can get through a row of spindles and race each other to the finish. Few "half-timers" are now employed, but on reaching the age of fourteen boys and girls simply rush into the mill. Boys get 10s. a week, girls 7s. 6d.; women up to 22s. or 23s.; card-room hands from 27s. 3d. to 35s.; weavers from 18s. to 27s. The Factory Commissioners seventy years ago returned the following table of average weekly earnings in a cotton mill:—

Age.	Males. s. d.	Females. s. d.
From 9 to 10 . . .	2 9¾	2 11½
„ 10 to 12 . . .	3 8	3 9½
„ 12 to 14 . . .	5 0¼	4 10½
„ 14 to 16 . . .	6 5½	6 4¾
„ 16 to 18 . . .	8 2½	8 0½
„ 18 to 21 . . .	10 4	8 11
„ 21 and upwards . .	22 5¾	9 6½

The working week was then considerably over sixty hours, but the pace at which the machinery runs is much greater now and the intensity of work has increased with it. Even within the last few years the pace has been much accelerated. Workmen not yet of middle age tell me that when they began a man could often get a rest and even an occasional nap. Now attention is always at the stretch while the machinery runs, and the great complaint made by the operatives is that it often runs overtime in the meal intervals. They say that some mill owners "steal" three or four minutes here and there in the breakfast and dinner hours, amounting to ninety or a hundred minutes in the week.

In Bolton the mills are widely scattered round about the town, but are not far from the dwellings of the workers who, for the most part, go home to dinner. The development of the electric tramway system has greatly improved the facilities for getting to and from work. Their homes are comfortable—I may say very comfortable. As in nearly all our towns, except the inner parts of London, the people are housed in separate cottages, which generally consist of two stories and contain four rooms—a kitchen and front room on the ground floor and two bedrooms upstairs. Rents are 4s. to 5s. 6d. a week. The latter are for new houses, often provided with hot water. A large number of workmen own their houses, through the assistance of the co-operative society, which is here very strong and flourishing. The striking thing about these industrial towns is the absence of display on the one hand and of squalor on the other. They exhibit a general level of comfort, neither rising to luxury nor sinking to misery, which entirely differentiates them not only from the great cities but from all towns of a more mixed character. Neither Mr. Booth's investigations into the conditions of life in London nor Mr. Rowntree's analysis of York can be applied by analogy to manufacturing towns such as Bolton. It is a favourable specimen, I admit, but none the less quite typical. I am not speaking of show places or fancy cottages or selected homes, but of streets which can be numbered by hundreds and houses by thousands. Of course in a town of the size of Bolton, poverty, misfortune, illness, vice and dirt occur; but the proportion of them is surprisingly small; they need a good deal of looking for. On the other hand the evidences of a decent standard of living meet the eye at every turn. The houses are tidy and tidily kept. The people respect themselves and like to have things nice about them in a

plain way. The contrary is quite an exception. Clean curtains are a point of pride, and decent clothes for the school children. These matters are worth noticing. Little things lie at the springs of human action, and if one traces events back far enough one may often find the real cause of a strike in the fact—so to speak—that No. 30 can afford new curtains and new boots for the children, and No. 29 can not. In these textile towns the family is not dependent solely on its head, other members generally contribute to the exchequer, the aggregate income is good and the standard of comfort relatively high.

To see what the people are like you must observe them not only at work in the mill and at home or going to and from work, but also in their leisure time when they go out to enjoy themselves on Saturday and Sunday. This is the most striking feature of our industrial towns as compared with others. On Saturday afternoon you must go to the football field (in the season) to see the men, and to the markets to see the women. The scenes presented by these two institutions are remarkable and not to be witnessed in any other country, but they are common to all our manufacturing towns, and are even more striking in Yorkshire than in Lancashire. At the football field there are generally gathered from 10,000 to 20,000 men and lads, nearly all out of the mills and machine shops, tidy, well-dressed and well-behaved. They pay 6d. to go in. There are covered stands at a higher rate, and in inferior matches the entrance is sometimes 3d., but 6d. is the regular gate money. The spectators stand in serried ranks all round the ground and watch the game with intense interest. They keep up an incessant fire of comments and shout at every stroke or point in the play, which lasts an hour and a half. No better opportunity for observing them and their

demeanour could be provided if they were paraded for the purpose. Here is the manhood and the youth of factory-land at the end of their week's work. Scan them well and listen to their conversation. Physically, they are not remarkable either way. They are rather short than tall, but for the most part of fairly good build and very well nourished. They wear no signs of excessive toil or unhealthy occupation, nor do they look oppressed and dejected. They are full of animation and a spirit of sturdy independence; satisfied with themselves and their surroundings they neither fear nor envy any one. Somewhat rough and blunt of speech they are yet by no means ill-mannered; the stranger will meet with no discourtesy from them if he shows them none. Keen as they are about the game their language is generally free from the unspeakable obscenities which interlard the conversation of "the working classes" —men, women and children—in other parts of the country and particularly about London. So far as I can ascertain there is little or no betting on football; they enjoy the game as a genuine bit of sport.

While the men are taking their pleasure at the football field the women are taking theirs *more suo* shopping and marketing. All these towns have large covered markets which are open till eleven o'clock on Saturday night. The throng begins to gather in the middle of the afternoon, grows thicker and thicker and never ceases till closing time. The women stream up and down incessantly, eyeing everything, occasionally examining something more closely and asking a price, but rarely buying, while the dealers vociferously call attention to their wares. This is life—the crowd, the company, the movement, the lights, the choice of purchases, the bargaining—all dear from time immemorial to the feminine soul. All who cry "back to the land!"

and so forth go and look at the town and see what the people are doing when they please themselves—the men at the football field, the women at the shops and markets, both later at the music hall. I have spoken above of the factory village—not the exotic but the natural plant; there are plenty in Lancashire near the towns. I was exploring some one day and came across a delightful specimen. Clean, cheerful, bright, with excellent stone cottages at low rents, charming surroundings, co-operative stores, reading-rooms, and so on; only one license to 1,400 inhabitants. A woman was sweeping down the pavement in front of her house and I stopped to talk. She asked me in to see the house. "Yes," she said, "they are very nice houses." "The place seems altogether nice; you are well off here, aren't you?" "Well," she said in a grudging tone, "it is all right in some ways, but it is not like the town; there is no market." "But you have the co-op (colloquial for co-operative store) where you can get everything cheap." "Yes, but it isn't the same as the town and the market. You can't *look and pick*. I would rather be in the town." Nor would she budge from that position. Look and pick! If that is not feminine human nature I do not know what is. Here is the explanation of that curious process of the multiplication of drapers' shops which can be witnessed in every great town and all over London. The big ones breed little ones close by and the little ones grow to big ones. Soon the north side of Oxford Street will be nothing else from the Marble Arch to Oxford Circus or Tottenham Court Road. They are women's shops and they live on "look and pick," as any one may see by noting the customers and their proceedings. I knew very well what the lady meant, because I had carefully observed her class in several towns on as many Saturday evenings. The scene fascinated me and

more than once I stayed till closing time. The meat market is the most interesting. Looking and picking go on to the very end, and then down come the prices and the ladies get what they have marked perhaps hours before, and at their own price. At eight o'clock the salesmen are shouting "All on the board sixpence and eightpence"; at nine it is "All on the board sixpence"; at ten, "All on the board fourpence to sixpence"; and at eleven, "All on the board fourpence," and the board is swept bare.

I have been led somewhat aside from the subject of Bolton, for the foregoing observations have a general application and possess no special relevancy to that town; but it happens to be the first on my list, and as integral features of English industrial life the football field and the market naturally fall into place for description here. With regard to the town itself not much more need be said. It has the dinginess and the prevailing meanness of street architecture which are common to all the large English towns with a few rare exceptions, but it is rather a favourable specimen of its class. Its general aspect is homely and unpretending, the shops moderate; but it has several fairly good churches a stately town hall which cost £170,000 and is well set in a large open space, some charming parks, an excellent public library with a number of branches, two hospitals and other adequate public buildings. Municipal activity is strongly developed. Bolton was one of the first three towns in England (with Manchester and Birmingham) to apply the Municipal Corporation Act of 1836. The local authority runs free libraries, baths, markets, cemeteries, parks, gas works, electrical supply, tramways, sewage works, fever hospital, public and technical schools. The electric tramway system, recently laid down, cost £350,000 and imposed a heavy burden on the finances of the borough. The rates,

however, are not high, being in 1902 5s. 8d. in the £ (of which 1s. 4d. poor-rate) on an assessment of two-thirds of the rental. Bolton is not a socialistic place, though a stronghold of trade unionism. The flourishing condition of the trade unions takes visible expression in their conjoint headquarters at Spinners' Hall, where each union has its own ample offices with a large hall for general meetings and social gatherings. Nowhere are these societies better housed.

The place is not particularly smoky, notwithstanding its 206 factory chimneys in and about the town. From the medical officer's report for 1901, I learn that of the 206 there were 31 practically smokeless and 122 "in a satisfactory condition"; only 46 "emitted black smoke during the year in such quantities as to be a nuisance"; 43 notices were moved to abate, and 16 prosecutions, resulting in 15 convictions with fines, were taken on recurrence of the offence; 22 of the 46 improved so as to come within the legal limit, and 24 did not. This is a fair record of activity and success in smoke abatement. I cannot agree with those who maintain that the suppression of factory smoke is more successfully secured in Germany than in England; their experience must be very limited. In America there is no smoke at all where anthracite is burned; elsewhere there is no attempt at abatement and smoke is a far greater nuisance than anywhere in England.

Bolton is not a slummy town; in 1901 thirty houses were closed, twenty-two demolished and twenty-eight "made fit". There is very little back-to-back property, and the density of population is low. For the whole borough it is only eleven persons to the acre, and in the most crowded district only 69·6. The number of persons to each inhabited house is 4·6. That in a nutshell is the

"housing of the working classes" in English industrial towns. They are housed in small cottages spread out over a great extent of ground, and on the whole it is the best housing to be found in any country.

Bolton has an excellent technical school, well appointed, well managed and well attended, in which the local industries are thoroughly taught. The elementary schools provided in 1902 accommodation for 37,253 children, thus divided: Board schools, 13,342; Church of England, 17,759; Roman Catholic, 3,670; Wesleyan, 2,115; others, 367. The great preponderance of denominational schools is a striking feature of the Lancashire towns, which have a strong religious element. The town has upwards of 100 places of worship, of which forty belong to the Church of England.

Bolton is an important railway centre. Lines converge there from Manchester, Bury, Blackburn, Preston, Wigan, Eccles and Liverpool. It is also connected by canal with Manchester and other places. In addition to the railroads, extensive local intercommunication is provided by electric tramways, which are now established in all our industrial districts and are in process of further development.

The local co-operative society plays a conspicuous part in industrial life at Bolton. It has about 29,000 members (1902), upwards of seventy stores, and a share capital of £618,033. The headquarters is a very large and handsome building. The net profit on the half-year's trading to June, 1902, was £65,430 7s. 3d.; advances to members for building, £31,436; expenditure on education department (library reading-rooms, evening classes, etc.), £2,070 17s. 7d.

Vital Statistics of Bolton, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births over Deaths.	Deaths under one year per 1,000 born.
168,748	27·5	18·2	9·3	172

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Proceedings for Drunkenness.
167	603	560

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
40	2	5	5

Oldham.

Much that has been said about Bolton holds good of its neighbours and need not be repeated. There is a family likeness between all these towns, but each has special features of its own, and those which distinguish Oldham deserve notice. It is, in truth, a very singular place. If any one asked me to name a town in which to study industrial life in England I should unhesitatingly say Oldham. It is the most complete example of the purely manufacturing town that can be found anywhere. The Commissioner of Labour to the United States, Mr. Carroll D. Wright, whose knowledge of industrial matters is equally accurate and comprehensive, has noted the fact. "The true type," he says, "is Oldham, not Manchester." The population consists entirely of mill and workshop hands with their superior officers, and just so many tradesmen and professional men as are needed to minister to their wants. There seem to be no residents of the leisured class at all, and there is no accommodation whatever for visitors, neither hotels, nor even inns, but only public-houses. At Bolton one finds an inn of the old-fashioned homely kind, which has a "commercial" room and can make up about twenty beds, but Oldham has not even so much as this. They can manage a couple of sleeping places—you can hardly call them bedrooms—at one of the public-houses, and that is all. There is hardly a village in the country which could not do better at a pinch. Indeed I have got a

much better bedroom in a village in Somerset which consisted of a farmhouse, three cottages and the public-house. Yet Oldham is a town with a population of nearly 150,000. The explanation, no doubt, lies in its proximity to Manchester. The distance is only six miles and a few minutes by rail. Consequently no one stops there. Externally, life is here of the plainest drab; everything is for use, nothing for ornament. The town appears to have grown simply by the accretion of mills and works with the necessary streets for the accommodation of the workmen; 73 per cent. of the houses contain less than five rooms.

So far as I can ascertain it has no long industrial history. It is the outcome of the great cotton manufacturing enterprise previously described. Before that time it was only a village. The parish church was consecrated in 1406 and is said to have replaced a still older foundation. At the end of the eighteenth century the manufacture of hats was carried on upon a large scale, and one of the principal benefactors of the town, Thomas Henshaw, made a large fortune in this trade, which appears to have died out or gone elsewhere. There are, however, some woollen manufactures, and possibly this was an old industry as at Bolton. Be that as it may, the real evolution of Oldham dates from the cotton machinery era. I imagine it was virtually an off-shoot of Manchester, selected as a site for cotton mills on account of the presence of coal on the spot. Its development was exceedingly rapid. The population which was only a few hundreds in 1760, had risen to 12,000 in 1801, and to 32,000 in 1831. Oldham rivalled Bolton, and they have been rivals ever since. But they specialise in different directions. The chief business of both is cotton-spinning, but while Bolton is the great centre for fine yarns, Oldham until recently devoted itself to low and medium counts; and these

it produces in incredible quantities. According to Worrall's *Directory* there are in this one town nearly 12,500,000 spindles, that is to say, nearly as many as in the whole of the New England States of America, half as many again as in the whole of Germany, twice as many as in France and four times as many as in Austria. The thing is truly colossal and we cannot wonder that the Lancashire folk have been somewhat slow to believe in the ability of other countries to compete. I do not know what is the output of yarn from Oldham, having been unable to find any statement on the subject, but it nearly all goes away to the weaving towns and to foreign countries. There are some 17,000 or 18,000 looms in the place and a few bleaching works, but these are a trifle compared with the production of yarn. With such an enormous activity the Oldham mills are, of course, very largely dependent on foreign markets. They have for many years been feeding the growing cotton weaving industries of other countries with material, just as the Oldham machinery works have fed them with plant; and their "cops" went everywhere. Germany and France were among their best customers, but these markets have fallen off. All the indications point to increasingly severe competition, from which Oldham has more to fear than Bolton, and since the bulk of the cotton used comes from America, to the menace of competition is added that of short supply, not merely through gambling operations but by the growing ability of the American mills to consume their own crop. The Oldham manufacturers have good reason to watch with concern the rapid multiplication of mills in the Southern States and to promote the movement for an alternative British supply.

The remarks already made about the Lancashire cotton mills and their appointments apply to Oldham not less than

to Bolton. The same vigour and energy are visible in the erection of new mills and in their equipment with the most recent machinery. The workpeople are organised in a similar manner and on the whole the unions maintain good relations with the manufacturers, though I did not find quite the same cordial acknowledgment as in Bolton. The machinery for settling disputes between labour and capital in these towns is the most complete and satisfactory that exists in any large industry in any country. An account of it is given in the chapter on trade unions in Vol. II. The wages of cotton spinners are regulated, as at Bolton, by a price-list agreed to by employers and operatives. Adopted in 1876 it forms the standard for the district. From 1876, when the list was adopted, down to 1900 wages ranged from 5 to 20 per cent. below the list, but in 1900 the standard was regained. This, I believe, is due to the energy and enterprise put into the business. The other great industry of the town—the manufacture of textile machinery—is conducted with at least equal vigour and is even more flourishing, though it has felt the stress of foreign competition and the recent depression of trade. Oldham boasts two large concerns of the highest reputation—Platt Brothers & Co., Limited, and Asa Lees & Co., Limited. I have found their machines at work in every cotton country. The works of the former are the largest of their kind in the world and rival the most famous establishments in any country. Here are 12,000 men employed in the manufacture of spinning and weaving machinery. The works cover sixty acres and are extraordinarily complete. They include saw mills, brass and iron foundries, an underground electric railway and other appointments of the most modern kind. The timber department, in which the packing-cases are made, is in

itself as large as a first-class Canadian lumber mill. The foundries alone employ 600 men and possess the singular feature of being built in three stories. The workshops are very fine, all the machinery used in them is English, being made at Oldham, Bolton, Manchester and Rochdale. The management is fully alive to the necessity of keeping abreast of the times in the adoption of improvements, but does not believe in "scrapping" machinery which does its work well, merely because it is old. That is sound sense. There is undoubtedly a *via media* in this matter, and the restless pursuit of novelty for its own sake may be carried too far. Platt's machinery goes all over the world, to America, China, India, Japan and the continent of Europe; but competition by Germany and Belgium is felt, though not as yet severely. These works can turn out regularly 30,000 mule spindles a week, 12,000 ring spindles, 250 looms and the other machinery to match. And it is all of the best, as those who use it acknowledge with one consent. Some writers are in the habit of deploring the export trade of textile machinery from England, which provides other countries with the means of competing with home manufactures, but that is a narrow and antiquated view of international industry. Any restriction of export is unthinkable. Those who suggest or hint at such a step can have no conception of the extent to which our manufacturing population is dependent on this great trade. I recommend them to go and see Platt's 12,000 men stream out of the works at closing time. Moreover the only effect of restriction would be to stimulate the manufacture of machinery in other countries, which are already coming up fast.

There are no fancy appointments at Platt's, but the factory conditions are good and the comfort of the men

sufficiently considered. A dining-room which will accommodate one thousand is provided for those who cannot go home to meals, and the wage system is satisfactory to both sides. It is chiefly piece-work with a minimum weekly basis and a bonus, according to the output. Engineers consider that they have done badly if they do not make 12s. above the weekly standard of 38s.

Probably enough has been said to show how the people of Oldham earn their living and what sort of a living it is. I am inclined to think that the general standard of comfort is even higher here than at Bolton, or possibly it may only seem so through the greater contrast afforded by the more homely exterior of the place. Beneath that dull and drab surface one finds an extraordinarily high general level of comfort prevailing, and a great enjoyment of life. One piece of evidence is striking. There are in Oldham three theatres and two music halls. This purely industrial town with a population of about 140,000 supports more places of amusement, in spite of its proximity to Manchester, than Brighton and Hove with a larger population consisting chiefly of middle-class residents and visitors of means. All our manufacturing towns are well provided with theatres, but Oldham has the largest supply in proportion to population of any that I have seen. I recommend the student of industrial life to add the theatre and the music hall to the football field and the market as fields of observation. He will see the working classes gathered night after night, men, women, girls and boys—particularly boys; not in rags and misery, but well-clothed, well-fed, hearty and full of life. In London and other mixed towns it is impossible to say who the theatre-goers are or where they come from, but in these manufacturing towns there is no doubt about it. They are the hands out of the mill and

the workshop. Another piece of evidence bearing on the standard of living in Oldham is the institution of the "wakes' week". Wakes are the local fairs or feasts which take place on some day in July, August or September. The work-people take a week at the end of August and go to the sea-side. The mills are closed on the last Saturday in August and are not re-opened until the following Monday week. This is settled by mutual arrangement between the employers' and operatives' associations, and is embodied in the official wages list. The money for the holiday is usually saved by weekly deposits into a fund throughout the year. This custom is peculiar to Oldham, where the people are said to be less thrifty than in other places and to prefer spending their savings on a good holiday once a year to keeping them for other purposes. It is said that in 1903 the sum drawn out for the wakes' week was £180,000, in spite of depressed trade and short time. I am told, however, that the custom is not so generally observed as it used to be, and that a more frugal spirit is gaining ground. Whether this is an advantage or not may be a matter of opinion; unless the money devoted to the holiday is saved by skimping the necessaries of life, of which there is no sign whatever, it is difficult to see how it could be better expended.

I have mentioned the extreme plainness of the town. It is epitomised in the town-hall, surely the most modest edifice of the kind to be found anywhere. Many a little country town with one-tenth of the population has a more pretentious civic headquarters. The railway station is more than modest; it is wretched. No place of so much importance is entered by such a depressing portal. But in the vigour and efficiency of corporate life Oldham is in no respect behind its neighbours. It has excellent technical

schools; a good public library, art gallery and museum, with a branch library and reading-room and eight other stations for the issue of books; a Lyceum, which comprises another library with news-rooms and is a handsome building; five sets of public baths; electric trams and electric light; a general hospital, fever and small-pox hospitals; and there are seventy clubs in the town. Elementary education was shared in nearly equal proportions between Board and Voluntary Schools according to the last report I could obtain (1900). The total accommodation was then 28,052 places, thus distributed: Board schools, 14,155; Church of England, 7,273; Roman Catholic, 2,426; Wesleyan, 2,986; "British," 1,212. The places of worship numbered seventy-nine, of which twenty-five belonged to the Established Church. I mention these details to show that there is nothing benighted or heathenish about this curious town with its unusual contempt for show. Nor are the more elegant amenities of modern life altogether lacking. One morning in the month of December I was going there by train from Manchester, and a woman got into the compartment carrying several large boxes of cut flowers. She set to work to re-arrange them with a professional hand, and I asked her where they came from and were going to. She was taking them to Oldham to sell and said that they came from the south of France through the market at Manchester. Cut flowers from the south of France to the town of spindles, wooden clogs and shawl-hooded factory girls! Clogs, by-the-by, are still much worn, but chiefly by children and as part of the workaday dress. So, too, with shawls in lieu of hats or bonnets. We are accustomed to associate this style of dress with the lowest and most poverty-stricken class of women; but that connection does not hold good in Lancashire. There

it has no such significance, but is merely a local costume which may go with the most comfortable and respectable circumstances. I have repeatedly seen groups of women bare-headed and shawled but wearing excellent clothes, exquisitely clean and models of neatness. On Sunday they assume a more fashionable appearance and can hold their own in the matter of dress with the work-people of any district or country.

The situation of Oldham is very similar to that of Bolton. It lies on hilly ground on the bank of a small river, but the surroundings are less attractive. The housing is of the same character and for the most part good. The average number of persons to a house is 4·58 (1901). The density of population is twenty-nine persons to the acre for the whole borough and ninety-four in the most populous district. I could find even less visible evidence of squalid poverty in Oldham than in Bolton; one traverses street after street of tidy, well-kept cottages. They are monotonous but comfortable. And here, too, many workmen are the owners of their houses. Of course in a town of this size there is some insanitary property. In the health report for 1901 I find it stated that forty houses were visited by the Committee as reported unfit for habitation. "Eight of these houses were ordered to be closed as unfit for habitation. Eight back-to-back houses were to be closed unless converted into through houses. Twelve houses were considered unsatisfactory, but the question of closing them was adjourned for a period of six months in order to give the owner, into whose possession they had recently come, and who had spent a considerable sum in repairs, time to suggest a scheme for their re-construction. The remaining houses were left over for future consideration. In addition to these houses fifty-two have been voluntarily

closed by the owners during the year—some on account of their insanitary or dilapidated condition being brought to the notice of the owners by the Health Authority, and others to increase or improve the accommodation of adjoining buildings." I give this extract because I think it fairly shows the proportion of insanitary housing and the activity of the local authority in mitigating it. The town is sewered and drained; it has no middens or cesspools, and the water carriage system is steadily extended year by year. The sewage is treated on modern principles by sedimentation and bacterial filter beds.

Vital Statistics of Oldham, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births over Deaths.	Deaths under one year per 1,000 Births.
137,413	24·6	19·6	5·0	173

Miscellaneous Statistics.

Liquor Licences.	Proceedings for Drunkenness.
501	828

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
25	5	4	2

Blackburn.

Blackburn completes the trio of great cotton manufacturing towns; Bolton is the chief centre for fine spinning, Oldham for coarse spinning and Blackburn for weaving. It has only a comparative trifle of $1\frac{1}{3}$ million spindles, but nearly 80,000 looms (Worrall's *Directory*). Consequently the Associations of Cotton Cloth Manufacturers and of Weaving Operatives have their headquarters here. The Manufacturers' Association represents some 300,000 looms, which is about one-half of the total number in Lancashire. It has local branches at Preston, Accrington, Bury, Rochdale, Bolton, and other towns. The Opera-

tive Weavers' Association counts about 90,000 members, of whom 19,000 belong to Blackburn. Three-fifths of them are women. I do not know why the weaving industry has developed here more than in any other town, for Blackburn was later in adopting the power-loom than some of its neighbours, but it is an ancient seat of textile manufactures with a history very similar to those already recounted. The Parish Church dates from 598, and before that the Romans had a settlement here, as in so many ancient seats of industry. The connection occurs so often that, as I have suggested before, it is probably more than accidental. The Flemish weavers brought the use of cotton yarn in the seventeenth century, and "Blackburn checks," woven of a linen warp and cotton weft, dyed in the thread, became famous. These were superseded by "Blackburn greys," which remained the staple trade until the era of machinery and cotton. Its advent was nowhere more strenuously opposed. Hargreaves belonged to this neighbourhood, and his fellow workmen did him the honour to break into his house and smash his machine. The opposition to spinning machinery had been so violent that when the power-loom came the manufacturers were afraid to introduce it, as they were at Bolton, until it had been well established elsewhere. After that Blackburn developed rapidly like the others.

In its natural features and immediate surroundings this town is the most attractive of the three. It is situated on the banks of two small streams, the Blackwater and the Darwen. The lie of the ground is hilly and diversified; there is some picturesqueness in the centre of the town, in the grouping of buildings and the irregular streets; and a large park, left in the natural state, is a feature of exceptional charm. The outskirts are also brightened by a

residential fringe of superior houses with good gardens. Being at a greater distance from Manchester than Oldham and Bolton, Blackburn is less dependent on that centre, but is rather a centre itself for a number of smaller towns and villages around it. It has a more residential character and provides more accommodation for visitors. At the same time signs of poverty are more common and slummy dwellings more numerous, although the density of population for the whole borough is very low, and the number of persons per house is only 4·6, which is just about the same as in Bolton and Oldham. In 1901, sixty-one houses were "closed as unfit for habitation," forty-seven were "ordered to be altered or closed," sixty-four cases of "dilapidated premises" were scheduled, and fifteen houses were demolished. These figures bear out the results of observation. Although the expenditure on actual pauperism is as low in Blackburn (1s. 11d. per head in 1902) as in the neighbouring towns, the general standard of comfort is not so high. Weaving is a less remunerative occupation than spinning, and it is subject to greater pressure from foreign competition. Since 1878 wages have remained from 7½ to 15 per cent. below the standard list, and the comparative lack of prosperity is reflected in the movement of the population. In the decade 1891-1901 emigration exceeded immigration, and the rate of increase, which had been 20·4 per cent. in 1871-81 and 15·4 per cent. in 1881-91, fell to 6·3 per cent., so that the population of the borough was found at the last census to have been largely overestimated.

The trade-union representatives of the operatives do not allow any serious weight to foreign competition as a factor in the comparative stagnation of the local industry, but they accuse the manufacturers of want of enterprise and of providing bad material. This complaint is persistently

made, and in 1901 led to a strike. The union paid £2,000 to settle the action brought by the employers for picketing. The earnings of weavers, male and female, average 23s. a week. Some women earn more than men. With regard to the alleged lack of enterprise in the adoption of improvements on the part of employers, the trade union officials say that they are not so foolish as their forefathers in resisting novelties but rather welcome them. That does not agree with the information I have received in regard to their attitude towards the automatic loom; and whatever the views of the union may be, the rank and file of the workpeople seem to be animated by much the same spirit as in the past, though it takes a less violent form. For instance, there was trouble not long ago on the introduction of the Barber knotter for knotting ends, and a strike occurred. The weaving trade is at present face to face with the problem of introducing a very important improvement in the shape of the automatic loom, which is gradually being perfected and is bound to come. Its adoption will not be an easy matter, and it remains to be seen how the weavers will take it. I am informed on the best possible authority that the trade union officials offer all the opposition they can and manufacturers are hesitating to make the experiment. Only one mill had been fitted with the automatic loom in 1904, but the future of a section of the weaving industry certainly depends on it. America has already taken a large part of the Shanghai trade from Lancashire and will not stop at that.

A point of great importance in industrial life, which I have not yet mentioned, comes into prominence at Blackburn. The infantile mortality is higher there than in any of the great towns with the sole exception of Preston, which is in the near neighbourhood and the seat of the same kinds

of industry. The mean infantile death-rate (deaths under one year to 1,000 births) of the twenty-eight large towns in the fourteen years 1888-1901 was 175; that of Blackburn was 203, and of Preston, 231. Nor is there any apparent tendency to diminution, but rather the contrary, although the birth-rate has fallen heavily, as the following table will show:—

Birth-rates and Infant Mortality at Blackburn.

Years.	Births per 1,000.	Deaths under one year per 1,000 born.
1883-86.	37·4.	166·2
1898-1901.	28·3.	202·7

This appears to me to indicate a very grave state of things and one which is not easily explained. To say merely that it is due to "the factory system" is no explanation at all, for that system was no less in operation in the earlier period than in the later. Nor can poverty be the cause, for the earlier period was one of greater depression and lower wages than the later. The standard of wages in each of the four years 1883-86 was 15, 10, 10 and 10 per cent. below the Blackburn list prices; in the four years, 1898-1901 it was only 10, 7½, 7½ and 7½ per cent. below.[1] A partial explanation is found in the weather, for the four later years had exceptionally hot summers, and the infant mortality always rises under that condition. Accordingly we find it higher for the whole country, the figures for the two periods being 152·2 and 160·7. But there is a vast difference between this increase and that noted for Blackburn—the difference between 5·5 per cent. and 22 per cent. There must be something very exceptional in the circumstances of this town. It is not general sanitation, which has improved, nor is it over-crowding, which

[1] *Board of Trade Blue-book on British and Foreign Trade and Industry* 1903, p. 267.

has been lessened. In the decade 1891-1901 there was a decrease of overcrowding of 24·6 per cent. in one-roomed, 21·8 per cent. in two-roomed, and 6·0 per cent. in three-roomed tenements.[1] Another possible explanation is that a larger proportion of women are now employed in the weaving sheds. There is certainly a connection between the factory employment of women and infant mortality, and it cannot be a mere coincidence that the latter should be higher in the two chief cotton weaving towns, Blackburn and Preston, than in the other large towns. The number of women employed in the textile industry at Blackburn is very large. Out of a total of 38,412 persons over ten years of age so employed at the time of the last census in 1901, 23,869, or more than three-fifths, were females, and of these, 8,368 were married women or widows. It is, of course, a commonplace that when girls go into the factory they do not learn domestic duties, and that mothers who go to work cannot attend to babies at home, but that has a general application. The question is whether the number is so much greater in Blackburn and Preston than in other textile towns as to account for the higher mortality, and whether the proportion has increased of late years. I find that as a matter of fact the number is much greater, as the following table shows :—

Town.	Women Employed in Textile Factories (1901).	Percentage of Population.	Infant Death-rate (Four Years).
Bradford . . .	32,696	11·7	169
Bolton . . .	17,849	10·6	172
Oldham . . .	17,099	12·4	179
Blackburn . . .	23,460	18·3	202
Preston . . .	16,263	14·3	233

From this it appears that there is a broad, though not an exact, correspondence between the proportion of women employed and the infantile death-rate ; and it is strength-

[1] *Annual Report of Medical Officer of Health for Blackburn*, 1901, p. 8.

ened when the women are further classified into married and unmarried. The proportion of women classified in the census as "married or widowed" to the whole is, roughly: Bradford, one-fifth; Bolton, one-eighth; Oldham, between one-fourth and one-fifth; Blackburn, more than one-third; Preston, nearly one-third. Thus in the two towns conspicuous for excessive infant mortality not only is the proportion of women working in the factory much higher, but a much larger proportion of them are married. The connection is therefore clearly established.

But this does not account for the increase of infant mortality noted above for Blackburn. On the employment hypothesis there should be a corresponding increase in the proportion of women employed, but that is not the case. On the contrary, there has been a diminution. The percentages shown by the three last censuses are: 1881, 19·4 per cent.; 1891, 19·5 per cent.; 1901, 18·3 per cent. In Preston also there has been a diminution, so that the employment hypothesis fails entirely on this point. Still less does it account for the higher mortality in Preston over that in Blackburn, for in the latter both the proportion of women employed and the proportion of married women to the whole number are higher than in Preston; yet in regard to infant mortality Preston is as much higher than Blackburn as Blackburn is higher than the other towns. Obviously there are other factors at work. The whole question demands a much more searching investigation than I am able to give to it here. As one of the most important conditions of industrial life I could not pass it over in connection with Blackburn, where it arrests attention in such a striking fashion, but I have only been able to touch on certain points. Some further observations will be found in the next chapter in connection with

Saxony, where the infantile mortality is very much higher than in any of the English towns. (See also the figures for the American textile towns, which are equally high, in Chapter IV.)

"Factory" in Blackburn means for the most part weaving shed. This is a workshop to which a great deal of attention has been devoted, and it has an Act of Parliament all to itself. This Act is discussed in the chapter on Factory Laws. There is a good deal to be said about it from different points of view. It was chiefly intended to improve the air in cotton weaving sheds, where the use of artificial moisture tends to enhance the fouling of the atmosphere. There is no evidence that the occupation is specially injurious to health, but it is satisfactory to note that a great improvement in the atmospheric and other conditions has been effected in recent years. On that head the district factory inspector and the medical officer for Blackburn are agreed. The latter says: "The health conditions of the cotton factories, but more particularly of weaving sheds, is undoubtedly rapidly improving".[1] I have mentioned above the complaint of the trade unions that the Blackburn employers lack enterprise. I do not know whether that charge is justified or not, but I certainly could not take a German or American manufacturer into a Blackburn shed with as much confidence as I could into a Bolton spinning mill. Backwardness, however, seems to be due more to the trade than to the place, for I have been over a spinning mill in Blackburn (the Imperial) which cannot be surpassed for equipment anywhere. The weaving trade has been depressed, and, in addition, the extremely drastic provisions of the Cotton Cloth Factory Act have not tended to encourage the investment of money in

[1] *Annual Report for 1900*, p. 97.

the business. The number of persons employed in the manufacture of cotton at Blackburn diminished from 39,220 in 1891, to 37,431 in 1901; and in Preston from 28,383 to 23,951. More recently signs of reviving enterprise have appeared and new mills are being built.

There is, however, one industrial matter in which Blackburn cannot be charged with any lack of enterprise. I refer to its admirably appointed technical school, of which full advantage is taken by throngs of lads out of the mills. The school is housed in a handsome building standing in its own grounds and is as complete as it is well-attended. Special attention is, of course, paid to the local industry and the courses of instruction in designing, weaving and dyeing are most thorough.

In municipal activity Blackburn is in no wise behind its neighbours, and in one respect it has taken, perhaps, exceptionally vigorous and successful action in a campaign against betting. Bye-laws for dealing with street and public-house betting were adopted in 1898, and the chief constable informed me at the end of 1902 that it had been practically stamped out; they had not had a case for eighteen months. This very important subject is discussed in the chapter on Social Conditions.

I have already mentioned the large proportion of denominational elementary schools in Lancashire. The case of Blackburn is still more striking than those of Bolton and Oldham. The accommodation provided in 1900 was as follows :—

Board Schools	1,578
Church of England Schools	16,106
British and Nonconformist Schools . . .	7,346
Roman Catholic Schools	4,763
Total	29,793

The number of places of worship is eighty-six, of which thirty-three are Church of England, ten Roman Catholic, thirty-seven Nonconformist, and the rest miscellaneous.

Vital Statistics of Blackburn, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births over Deaths.	Deaths under one year per 1,000 born.
127,719	26·5	19·5	7·0	193

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Proceedings for Drunkenness.
145	468	684

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
33	3	3	3

Of the other large Lancashire towns, Preston, Burnley, Bury and Rochdale are all engaged chiefly in the manufacture of cotton, but paper is also a leading industry at Bury. With the exception of Preston, which is the most pleasing of all our manufacturing towns, they are inferior to those described. Rochdale is the original home of the co-operative movement. Warrington stands apart; it is an iron and steel town and noted for the manufacture of wire.

The Yorkshire Towns.

The West Riding of Yorkshire bears a close resemblance to Lancashire in the nature of its industries, the character and customs of the people and the appearance of the towns not less than in its natural features. Yorkshire stands first of the counties in the production of iron and steel and in miscellaneous iron and steel trades, second in textiles and in engineering and machinery. But there are differences. Coal, engineering and machinery are common to both; but in the textile manufactures cotton gives place to wool. Out of 209,000 persons employed in this branch, Yorkshire accounted for 181,000. Wool is no doubt the

most ancient of all the textile materials. The fibres have the property of felting, or adhering together, by reason of their serrated edges, and can therefore be formed into a kind of cloth by the simplest manipulation. They only require to be rubbed together by hand, and the more they are rubbed the closer they adhere. That, by the way, is the reason why wool fabrics shrink in washing; the manipulation causes the fibres to felt. This property must have been discovered and utilised by man in an early stage of development; and the sheep is a handy animal to keep in a grass country. The shepherd's is the oldest of trades next to the gardener's. And to my thinking wool is still the noblest and most interesting of all the materials. It has not the gloss of silk, the firm smoothness of linen, or the universal and multitudinous usability of cotton; nor can it compete with them in fineness of thread; but it has more character than any of them. It possesses more substance and durability, is more varied by nature and capable of more varied transformation by art; it serves more solid and serious purposes. And in sheer beauty it is very little behind silk. Dress fabrics are now produced from wool—in the general and non-technical sense of that word—of astonishing beauty, delicacy and variety. One might fill pages with descriptions of the things made from this invaluable material. And the West Riding of Yorkshire is the greatest seat of its manufacture. I do not mean to imply that Yorkshire has not serious rivals and even superiors in some respects; but if the whole art and craft of manipulating the raw fibre in all its varieties from sorting down to finishing be taken into account, then this corner of the world is just as pre-eminent both for what it has done and still does for the manufacture of wool as is Lancashire for that of cotton. It played the corresponding part in the

mechanical revolution of a century ago, and it still produces the best machinery for many of the most important processes.

Bradford.

The headquarters of the industry is Bradford, which is the largest of all the purely textile towns. It owes this position chiefly to natural advantages which it possesses in the most bountiful measure. Beautifully situated on the green hills which rise to the south of the river Aire it must once have been a lovely spot. It stands on a rocky formation, which furnishes a cheap and abundant supply of the best building material. The town is solidly built of stone, handsome and durable, with only one defect; it readily absorbs carbon from the air, and as there is a good deal of carbon in the air Bradford buildings soon assume an excessively dingy aspect. The only consoling reflection is that they are not quite so black as those of Leeds. The ground furnishes an equally cheap and abundant supply of coal, lying near the surface and easily got. There are two beds, the upper at a mean depth of forty yards and the lower at eighty yards. And, to complete the tale, above the coal there is iron. The famous Low Moor iron—Low Moor is within the enlarged boundaries of the city, and Bowling ironworks are actually in the town—still holds its own with the best. Of course the Romans did not pass such a place over, and there is some reason for believing that they worked the iron stone. A beck runs through the town to join the river Aire, and on the banks the manufacture of clothing was carried on from a remote period. The Yorkshire dales hard by furnish the best of sheep grazing, and the famous Ripon fleece, which cannot be equalled for certain qualities, is the product of the neighbourhood.

To all these natural advantages must be added a native stock of remarkable vigour. The Yorkshire people are characterised by great independence, determination and shrewdness, and these qualities are associated in a peculiar degree with Bradford. The hero of most Yorkshire stories is supposed to be a "Bradford chap," rather than a native of York or Leeds or even Sheffield. This may be merely a conventional trick, but it is the fact that Leland, who described Bradford in the fifteenth century as a "praty quik market toune, which stondith much by clothing," observed that Leeds, though equally large, was not so "quik"[1] as Bradford. The inhabitants have exhibited their quickness in various occasions and in divers ways. In the Parliamentary Wars they made great play on the revolutionary side and suffered heavily for the faith that was in them; but they stuck to their colours with undaunted resolution notwithstanding. Among other exploits they marched against Leeds which was in the hands of the Royalists and drove them out. Their military ardour was not less conspicuous in the Napoleonic Wars, when they helped to man the navy and raised a corps for home defence with enthusiasm. Again, in a very different sphere of action, Bradford's love of independence asserted itself in regard to Nonconformity, of which it became a stronghold. Similarly in the organised attack on the liquor traffic, Bradford took the lead in the first days of the "temperance movement" in England. In industrial matters the spirit of enterprise and the spirit of insubordination were both conspicuously displayed during the period of mechanical revolution, the one by the efforts to introduce machinery, the other by the determined opposition of the work people, which nowhere took a more

[1] Lively, vigorous—still used in that sense in Yorkshire, but more often in the form of "wick".

violent form. In the evolution of textile machinery, its application to wool products and the utilisation of new materials Bradford has been a great pioneer.

All these factors have contributed to the industrial supremacy of this Yorkshire town in a branch of manufacture which is still very widely distributed and was once carried on with equal or greater success in many other parts of the kingdom (among them another Bradford in Wiltshire) and in many other countries. The northern town has won its position by degrees. It is an ancient place, mentioned in *Doomsday Book*. In 1256 it obtained a charter to hold a weekly market, and in an inquisition held in 1316 the existence of a fulling mill is mentioned. The town grew slowly in importance, but did not emerge into a position of marked industrial eminence until the steam and machinery era, when its coalfields gave it an advantage and proximity to Lancashire probably stimulated the invention and adoption of mechanical appliances. I think it must be admitted that Lancashire and the cotton trade were the first in this field. The branch of the wool industry in which the Bradford district specialised was that known as "worsted". It is supposed to have taken its name from the village of Worstead in Norfolk, where the yarns were first made in England; but this derivation is of doubtful authenticity. The difference between worsted and woollen lies in the process of combing, by which the longer fibres of the wool are separated from the shorter. The former make worsted, for which the German term is "Kammgarn" or "comb-yarn". The traditional inventor and the patron saint of wool-combing was Bishop Blaize. It was a process laboriously carried on by hand long after spinning and weaving by machinery and steam-power were well established. Cartwright, indeed, invented a combing ma-

chine which was patented in 1789, and an improved one in the following year. This was almost a greater proof of genius than the power-loom, for he had no more practical knowledge of combing than of weaving; yet the principle of his second machine—the circular horizontal comb table—is identical with that of the most modern and efficient comber. Cartwright's machines were tried, but were not practically successful. Mr. Robert Ramsbotham was the first to introduce one into Bradford, and it did not answer. Nor was mechanical combing brought to a real success until half a century later, although many inventors tried their hands at it. The effective agent in perfecting the process was Mr. S. C. Lister, now Lord Masham, and Bradford was the scene of the achievement. Mr. Lister was the pioneer not so much of invention as of actual industrial application. In 1842 he took up a machine brought out by Donisthorpe of Leeds, and the two together turned it into such a practical success that wool was combed by it at Manningham in 1843, and they had orders for fifty of the machines from two other manufacturers. Priority was, however, subsequently claimed by the Alsatian inventor, Heilmann, who patented a machine in 1846. Bradford was full of enterprise in those days; and other manufacturers, one of whom was Sir Titus Salt, bought up Heilmann's rights and in 1852 challenged the Lister-Donisthorpe combination in the courts. The decision was that each had infringed the other's patents. Eventually Mr. Lister bought the Heilmann patents for £30,000, but instead of using them he continued to improve his own machines. So valuable were they considered that, though the selling price of a machine was only £150, manufacturers were willing to pay a royalty of £1,000 on each—said to be the highest patent royalty on record. Some share of the credit was also due to Mr. Isaac

Holden, with whom Mr. Lister was working on the problem at this time.[1] The Lister comber, as it is called (whatever the share of Donisthorpe, Heilmann or Holden in its evolution) is certainly a most fascinating piece of mechanism. It has the "square motion" action, which probably resembles the movement of the human arm and hand more nearly than any other machine yet invented. The arm bends down, seizes a handful of wool fibres, turns back on its elbow and hands them on. But it is not the comber now most in vogue. That is the "Noble," which is also a very beautiful machine, but on a totally different principle. It consists of concentric rings of pins or teeth revolving slowly in a large horizontal circle about 4 feet in diameter, and drawing the longer fibres out with a quick beating action. Wherever wool is combed you will see these machines, made in Yorkshire, with even more certainty than you will see Lancashire mules, wherever fine cotton is spun.

The story of wool-combing has led me out of the chronological order. The introduction of steam-power and machinery for other processes came long before the Lister period. About 1790 a manufacturer of the name of Buckley attempted to introduce steam-power into a worsted mill, but being strongly opposed he gave way. In 1794 two spinning machines were installed by a Mr. Garnett, and others by the Mr. Ramsbotham who tried Cartwright's comber. In 1800 the first steam mill was erected with an engine of fifteen horse power. In 1820 there were twenty with an aggregate of 538 horse power, and they continued to increase rapidly. But this change was not accomplished

[1] For the foregoing facts about the invention of the wool-combing machine I am indebted to a pamphlet prepared for the Bradford Cartwright Exhibition in 1904.

without a severe and sanguinary struggle, which amounted to a state of civil war. It is thus described :—

"In 1812 a spirit of insubordination was diffused through the wide and densely populated district of which Bradford is the centre, in consequence of the introduction of certain kinds of machinery. The lawless system under which the insurgents acted was called *Luddism*, and an imaginary personage styled 'General' *alias* 'Ned Ludd,' was their reputed commander. To effect the destruction of machinery and to attack the buildings in which it was contained fire-arms became necessary; hence bands of men, confederated for the purpose and bound by illegal oaths, were found prowling about the disturbed districts by night, rousing the inhabitants from their beds and demanding the arms provided for the defence of their dwellings."[1]

Eventually the hands of authority were strengthened by a special Act making the administration of these oaths a capital offence. Sixty-six persons were apprehended and seventeen executed. This put an end to Luddism, but they were ever a stubborn or—to use the more expressive colloquial word—a *stunt* folk in Yorkshire, and they had by no means done with their resistance to machinery. The particular objects of the Luddite hostility were the machines for dressing cloth; the turn of the weavers and the power-loom was to come. In 1822 one was secretly built by Mr. Warbrick, but the weavers got wind of it, surrounded the mill and threatened to break in and destroy the obnoxious thing. So it was taken down and carried away, but the mob attacked and smashed it on the road. Nor did they cease their opposition for several years. In 1825 a trade union was formed and a strike, which lasted twenty-two weeks, occurred. There were at that time over 20,000

[1] See Baines's *History and Directory of Yorkshire.*

weavers in the district, and they earned from 10s. to 12s. a week. The employers were, however, equally stunt, and in 1826 matters came to a crisis. In one factory a riot occurred, in the course of which two men were killed. This sobered the rest and from that time the march of machinery went forward more smoothly. In 1834 the Jacquard loom was introduced and the screw gill applied to worsted spinning.

About this time Bradford enterprise was displayed in another direction by the introduction of new materials in the shape of alpaca and mohair which have ever since been a conspicuous and special feature of the local industry. The alpaca is a sheep-like animal with a fleece remarkable for length, softness and brightness; its native home is Peru. The credit of successfully utilising it for manufacture on a commercial scale belongs entirely to Sir Titus Salt, who displayed extraordinary sagacity, perseverance and ingenuity in detecting the quality of the fibre and turning it to account. The story of the young wool-stapler who became one of the greatest of manufacturers and the creator of the first model factory village is one of the romances of industry. Mohair is the fleece of the Angora goat, known and valued as a textile material in the East from the remotest antiquity. Its qualities are length of staple, softness, brilliance and capacity for taking the dye. It has almost the lustre of silk. The supply used to come entirely from Asia Minor, but of late years the goat has been bred at the Cape, which now exports nearly twice as much as Turkey. The Turkish mohair is liable to contain the spores of anthrax, and particularly that which comes from the Van district. Great care is taken to prevent infection, but cases still occasionally occur. Its use is therefore not without drawback, but it has greatly con-

tributed to the development of the Bradford trade. The dress material commonly called alpaca by ladies is chiefly made of mohair.

Probably enough has now been said to show how much the evolution of this great industrial district owes to native energy, as well as to natural advantages. But two other points deserve to be mentioned. One is the creation of the silk waste industry by Mr. Lister, who embarked on this enterprise after the successful achievement of mechanical wool-combing already related, and carried it through with the same ingenuity, resource and resolution. At present the great mills at Manningham are entirely devoted to the manufacture of silks, plushes and velvets by Mr. Lister's processes. But this is an individual case. The other point is the dyeing trade. Formerly Bradford cloths were chiefly dyed at Leeds, but the local industry has now been developed on a large scale, and the Bradford Dyers' Association is an important body. Nearly 5,000 persons are employed in bleaching and dyeing. Exclusive of these the number employed in the wool and worsted trade is 46,401 (1901). They are thus distributed: Wool-sorting, 1,747; combing, 5,375; spinning, 14,683; weaving, 16,086; other processes, 8,530. Of those employed in weaving nearly 13,000, or considerably more than three-fourths, are females. The total number employed in the various branches of the textile industry in Bradford is 58,791, of whom 32,696 are females. But even these figures give no idea of the manufacturing activity of the district. The town of Bradford is merely the centre. It is encircled by a dense ring of small towns and villages, in many parts practically continuous, and behind these a further ring of larger towns—Halifax, Huddersfield, Dewsbury, Wakefield, Keighley—all given up to the same or closely allied branches of manufacture, not to

mention Leeds, which is the commercial capital of the whole, and holds a position in the West Riding somewhat analogous to that of Manchester in Lancashire. These towns specialise more or less after the manner of the cotton towns previously described. Thus Halifax is famous for carpets, having the great Crossley Mills, where all the finer kinds of English carpet are made, in the heart of the town. Huddersfield and Dewsbury are the chief centres of the woollen as distinguished from the worsted industry; here the shorter fibres or "noils," separated in combing, are worked into blankets, shoddy and other cheap clothing materials. This trade has recently provided a good instance of the value of ingenuity and the influence of fashion. Some one invented a material called "zhibeline," having a very loose texture and a hairy surface, made from woollen yarn. It was particularly suited for children's and women's jackets and became very popular. The usually despised "noils" were forthwith in great demand and the woollen trade enjoyed a substantial lift. Keighley is especially distinguished for the manufacture of textile machinery. There the famous establishments of Prince Smith and Hattersley are situated; their machines go all over the world and have a reputation second to none.

A detailed account of these towns would occupy more space than I can afford; it must suffice to take Bradford to represent the group.

As a town it presents some differences from those in Lancashire. I have already mentioned that it is built of stone instead of brick. This gives it a very handsome appearance where the buildings are clean or new, but when smoked-begrimed the stone assumes a gloomy and forbidding aspect. On the whole it is less cheerful than brick. For this and for other reasons the place is less homely. I

have called Leeds the commercial capital of the district, but it does not absorb the business element to anything like the same extent as Manchester. Bradford does its own business in a great measure and consequently contains a large number of big buildings—warehouses, offices, hotels—such as are not to be found at all in Bolton or Oldham. The centre of the town is made up of them, with shops to correspond; and indeed it presents a more important appearance than Leeds or Sheffield, though the latter are so much larger. The town hall, built in 1813, at a cost of £170,000, is well placed and an imposing object. The ground is very hilly and the irregularity of the central streets, which run in all directions, attests the antiquity of the place. The outskirts of the town have now extended in all directions and have become continuous with surrounding villages, once separate, such as Bierly, Thornton, Shipley, Saltaire; and some of the villages have themselves grown into towns. Numerous houses of a superior kind with gardens indicate the presence of a large class of well-to-do residents. And along with the signs of wealth are, as usual, to be found evidences of poverty. If Bradford surpasses the Lancashire towns (Manchester and Liverpool excluded) in the size of its buildings, the importance of its streets and the whole impression of wealth and power, it certainly falls short of them in the general standard of living maintained by the mass of the people. There is more squalor and more bad housing. Bradford contains a considerable area of slums. I am informed that they are inhabited chiefly by Irish of a low class employed in the mills on low wages. That may be, but the standing conditions are distinctly bad. There is a large amount of insanitary property and much overcrowding.

According to a special report made by the medical officer

in 1896, out of the fifteen wards into which the borough is divided, nine contained over sixty per cent. of back-to-back houses, and the remaining six contained from forty to sixty per cent. There were 619 houses back-to-back in continuous rows with a population of 2,728, and 1,928 houses back-to-back in blocks of four with a population of 9,116. Some of this property was built so late as 1892. A further report in 1898 gave details of a particular insanitary area consisting of 284 houses. The density of population was 301 persons to the acre, and the death-rate in the three years, 1895-97, ranged from 45·6 to 41·2 per 1,000. The sanitary condition of many of the houses was extremely defective. Considerable improvements have been effected since, but the census of 1901 showed that of the total population occupying houses of less than five rooms—namely, 205,231 persons—19·9 per cent. were living in a state of overcrowding (more than two persons to a room). The one-roomed tenements numbered 1,511, in which 3,288 persons were living and 54·3 per cent. of them in a state of overcrowding. Further, the medical officer's annual report for 1901 states that there were 531 cellar dwellings in the town, of which 136 did not comply with the regulations of the Public Health Act of 1875. Observation corroborates the unfavourable impression suggested by these facts. In examining the town I discovered the insanitary area referred to before I had heard of its existence, and was much struck by its bad condition in many respects, though I believe it has been improved since the date of the reports quoted.

Nevertheless it would be a mistake to conclude that Bradford is a dreadful place. Much of the housing is good, and in some of the outlying mill districts it is excellent. The density of population for the whole borough is only

twenty-one persons to the acre, the number of persons to a house is only 4·3, the death rate is below the mean of the large towns and the infantile death rate no higher. Some facts about the latter have already been given in connection with Blackburn. I will only add one other suggestive point here. The infant mortality in the Yorkshire textile towns is considerably less than in the Lancashire ones. That is not due to superior prosperity or mode of living or character of the people; nor is the relative proportion of women employed in factories more than a minor cause. The most important cause is simply that the birth rate is lower in the Yorkshire towns. The Lancashire people are less thrifty and prudent, and they have not carried the artificial avoidance of motherhood so far. Instead they let more children die. This feature of industrial life is exemplified in a still more striking degree in Saxony, where the arts of prevention are not practised at all.

Among the buildings which command attention in and about Bradford are the great mills, where its work is carried on. They are worth some notice, for they have no equals elsewhere. I fancy Saltaire must have given the lead in building premises of this character, for the old mills in the district are no better than those anywhere else. It was in 1851 that Sir Titus Salt was driven by his increasing business to look afield for new premises, and he went down to the river Aire, where there was plenty of room. There he built his mills and his model village for the workpeople, which he called, neatly enough, Saltaire. It is no longer a village, but part of the town of Shipley, which again is practically, though not administratively, part of Bradford. Unless I am mistaken this venture set a style in factory building, though possibly one of the other great firms was first in the field. At any rate there is nothing

anywhere else like these stately structures, solidly built of freestone, with gateway and approaches fit for a nobleman's mansion, roadways and yards beautifully kept, and a general air of dignity that reminds one rather of Windsor Castle than of a place of business. In addition to Saltaire I would mention Manningham (Lister's), Black Dike at Queensbury (John Foster & Son), Priestley's and Holden's, both in Bradford, and, perhaps most striking of all, the Greenholme Mills (W. Fison & Co.) at Burley-in-Wharfedale. The last is some little distance away, but it is in the Bradford district and the Bradford style. Surely no factory ever stood amid such charming surroundings or had so engaging an air. It stands in a veritable park on the banks of the beautiful and romantic Wharfe. The view from the wool-sorting room is like looking out of a window at Arundel.

Manningham is the largest of these great establishments. It employs over 4,000 hands, Saltaire and Priestley's are not far behind with 3,500; at Black Dike there are 2,600. A notable feature in connection with them is the housing provided for the work-people hard by. This is done on the largest scale at Saltaire, where some 900 houses have been built. They are excellent stone cottages and in great demand. The rents run from 3s. to 5s. a week according to size. I took particulars of some of them from the inmates, and found the scale as follows: Four-roomed houses, 3s. 9d.; five-roomed, 4s. 3d.; six-roomed, 5s.; that is to say, from 10d. to 11d. a room. At Black Dike Messrs. Foster have built 300 houses of the same character and equally moderate rental; and at Burley Messrs. Fison have about 100. Rent is much higher in the town of Bradford, running up to 6s. 6d. for average four-roomed houses and to 8s. for new ones. Besides houses there are at all these places various other provisions for the benefit of the work-people—schools and

"institutes," with libraries, reading-rooms, lecture-rooms, recreation-rooms, baths, and so forth. At Saltaire there are in addition a hospital and almhouses with an endowment of £30,000 for the aged poor, a church and Sunday schools and a charming park.

With regard to the industries the Lister mills at Manningham are a thing apart, being devoted to silk. Cotton and hemp are also manufactured on a small scale and there are some machinery works. But worsted and wool are the staple, and the trade is divided into many branches. There are not only the successive processes to which the material is subjected, but there are also different classes of material. Hence a great deal of specialisation. Some mills do nothing but comb, others nothing but spin, and they may even confine themselves to a single quality of yarn. Then there are the further processes of weaving, bleaching, dyeing and printing. Some of the great mills combine them all. They carry out every process from wool sorting to the finished goods, which include a great variety of dress materials both for men and women. But, as with the cotton trade, foreign competition and protective tariffs have fallen most heavily on the export business in finished goods. They find it easier to weave and dye than to comb and spin in other countries; and the development of those branches under the fostering influence of high duties has diminished the demand for cloth and increased that for yarn from England. Bradford therefore depends more and more on combing and spinning, and that tendency seems likely to continue. Not that the export of cloth has ceased. The superior quality —for Bradford justly prides itself on sending out the very best—still breaks a way through tariff walls to some extent; and new markets have been found. By the exercise of energy they may be retained and extended. But the

commercial success of Bradford depends mainly on worsted yarn to-day. In this product other countries cannot yet effectually compete, partly from lack of skill, partly from inferiority of material, and partly from climatic disadvantages. The last is very important. We have no more valuable industrial asset than our climate. I have mentioned its influence on the cotton trade; in worsted it is even more marked. The fibres of wool are very susceptible to electricity developed by friction, and in hot climates combing cannot be successfully carried on for this reason. Instead of lying smooth and straight and ready for spinning as they should, they go "wild" and stand out in different directions. The difficulty has not been overcome by any device and the advantage remains with the more temperate climate. A preliminary process requiring much skill and experience is wool-sorting. Not only do fleeces differ widely but each fleece contains several qualities or grades of wool corresponding to the parts of the body. These are separated and divided into classes, which again may be blended for different purposes. Wool-sorters earn from 35s. to 55s. a week. In recent years a good many have gone from the Bradford district to the United States. The earnings of weavers are based on a price list agreed to between the Chamber of Commerce and the Trades Council, in consequence, I am told, of a statement made by Mr. Drew, secretary of the Trades Council, to the Royal Commission on Labour, that the average weekly earnings of weavers did not amount to more than 9s. for the whole year. Weavers, it must be remembered, are chiefly women and girls. Their earnings now run from 16s. to 25s. for a week of fifty-five hours. In some mills male weavers earn as much as 37s. a week. In the spinning room girls are chiefly employed and earn about 11s. a week; their work is very

light. Children enter the mills at about 9s. a week. In the dyeing and finishing branch of the wool and worsted industry wages are based on an agreement entered into by the Bradford Dyers' Association for the employers, and by the Amalgamated Society of Dyers with some other trade unions for the employed. From the printed list supplied me I gather that the minimum rate for men employed in skilled work runs from 22s. to 25s., and for boys from 10s. upwards for a week of fifty-four hours. Very few women are employed. Consequently the dyers are better organised than other branches, which employ more women. The wool trade is certainly much less strongly organised as a whole than the cotton trade, and I think this is partly due to the character of the people. They are more individually independent and take less readily to combination of all kinds than the natives of Lancashire. The owners of several mills have told me that they never hear anything of the trade unions and have no trouble at all with their hands.

Bradford has an excellent Technical College, which is beginning to have a marked influence upon the local industries. I say beginning, because manufacturers do not yet avail themselves of the expert knowledge which the technical courses impart to anything like the extent that they might, but they are more and more coming to recognise the value and, indeed, the necessity of employing it. The College already does very good work, and will do better when it is more completely organised. The total number of students in 1902 was 1,136, of whom 188 attended the textile, 158 the dyeing, and 567 the engineering classes. The last include some handicrafts. The College is housed in a three-storied building which cost, with equipment, about £40,000, and in addition branch classes are held in the elementary schools. The weaving installation is par-

ticularly complete and well organised; and there is a good textile museum. But, as usual, the attempt is made to teach too many things, and the accommodation is already outgrown. If the present building were devoted to the purposes of a textile school alone, with departments for preparatory processes, weaving, dyeing, finishing and machinery, all thoroughly organised, it would be second to none.

Other features of the town are a Conditioning House for testing wool, yarn, cloth, oils and other materials; an Art Gallery and Museum, a Cartwright Memorial Hall, both the gift of Lord Masham, seven public parks, a Mechanics' Institute, built at a cost of £32,000, several public baths, and a public library with thirteen branches. With regard to elementary education, the denominational schools do not take nearly so large a share as in the Lancashire towns. In 1900 there were 119 Board Schools with accommodation for 39,754 children, and an average attendance of 27,035, and seventy-five denominational schools with accommodation for 23,337, and an average attendance of 12,586. Of the denominational schools, fifty-six belonged to the Church of England, seventeen were Roman Catholic and two Nonconformist. The number of places of worship is 220, of which forty-five belong to the Church of England. Bradford is the centre of an extensive system of railways and electric tramways, and it is also connected with Leeds and other towns by canal.

A notable feature of the Yorkshire towns, of which I have taken Bradford as a type, is the great love of music inherent in the people. They have innumerable choral and instrumental societies, and their choral singing enjoys a European reputation. Every eminent foreign musician who has conducted the large Yorkshire choirs or heard

them sing has accorded them unqualified praise. Their singing is distinguished by the strong ringing tone of the voices, the excellent intonation maintained even in the most trying works, a high degree of intelligence and extraordinary vigour and enthusiasm. The choirs of Leeds and Sheffield are the most famous, probably because they are the largest, but those of other towns are not a whit inferior in capacity. I have heard Mendelssohn's "St. Paul" given in Bradford in a style entirely beyond criticism. The soloists were the best of the day (the best English, that is), but the chorus "sang them off the platform" in every point of singing—voice, style and intelligence. These societies consist largely of mill and factory hands, and they are to be found in quite small places. As an instance I may mention the famous Black Dike Band, composed of men employed in the mills of Messrs. Foster at Queensbury. It was formed in 1855, and has won £7,500 in prizes at contests. Queensbury is a mill village with about 6,000 inhabitants.

VITAL STATISTICS OF BRADFORD, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births over Deaths.	Deaths under one year per 1,000 born.
280,161	23·06	16·7	6·3	168

MISCELLANEOUS STATISTICS.

Police Force.	Liquor Licences.	Proceedings for Drunkenness.
391	1,124	508

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
45	4	8	14

SHEFFIELD.

At Sheffield, one passes into a very different industrial sphere. It is wholly a metal town and, I think, the greatest of all metal towns. Textile manufactures have been tried there—silk and cotton—but they did not flourish. I do not

know why, except that the *genius loci* is against them. The fact illustrates the truth that industries cannot be planted here or there at will, independently of the natural conditions. Yet it is hard to say why Bradford should have developed wholly in one direction and Sheffield wholly in another. They are not many miles apart, their topographical features are curiously alike, the ground yields the same gifts—coal, iron, stone and water—and their history is very similar. In both cases it goes back to a very remote period, probably to pre-Roman times, followed by a feudal over-lordship; both were centres of conflict in the Parliamentary Wars of the seventeenth century, both obtained early reputation for their manufactures and experienced the same rapid expansion under steam. The differential circumstances which determined their fortunes were probably the absence of grazing land in the Sheffield district, which was rather covered with forest and heath, and the presence there of numerous small hill streams, suitable for turning grindstones, precisely as in the Solingen district of Rhineland. Arms and domestic cutlery were undoubtedly the earliest of the Sheffield industries, and the skill of the people was developed in that direction and fixed by inheritance. The cutlers had the material, iron, they had water-power for their wheels, fuel and water for their forges. Sheffield "thwytles" are mentioned by Chaucer, and no doubt the craft had then been long established. Possibly it derived an impetus from the Crusades, by the importation of skilled artificers from the East, for Richard I. gave the heiress of Sheffield, who was a ward of the Crown, in marriage to Gerard de Furnival, one of his Knights—an incident which may well have suggested some of the episodes in *Ivanhoe*. It was to Sheffield that those refugees from the Netherlands, who followed the same craft, were sent in the reign

of Elizabeth. The Corporation of the Cutlers was formed in 1624 by an Act of Parliament "for the good order and government of the makers of knives, sickles, shears, scissors and other cutlery wares in Hallamshire and parts near adjoining". The industry was no doubt distributed along the streams in the neighbourhood. For more than two centuries the Master Cutler for the time being was the head of the local community, for it was not until 1843, when the area now forming the borough already had a population of over 110,000, that Sheffield became incorporated and provided itself with a municipal government and a mayor.

During the seventeenth century the place increased but slowly. When packhorses were almost the only means of transport no large expansion of the market was possible. A survey in 1613 returned the number of inhabitants as 2,207, of whom the most wealthy were "poore artificers, not one of whom can keep a team on his own lands and not above ten who have grounds of their own which will keep a cow". It was, in fact, a village consisting entirely of handicraftsmen. In 1736 the population had increased to 9,695; if the neighbouring villages of Brightside, Attercliffe, Eccleshall and the Hallams, now part of the borough, be added, the total was then 14,105. In 1700 a town hall had been built for the transaction of business and other public purposes. In 1750 an enterprising gentleman of the name of Broadbent gave a marked stimulus to the export trade by opening up direct communication with Continental markets, and about the same time the river Don, which runs through the town, was made navigable from its junction with the Ouse to within three miles of Sheffield. Water communication with the North Sea was subsequently completed by means of a canal. In 1760 the first stage coach to London began to run; and in 1786 the

first grinding-wheel driven by steam was erected. This was several years before the effective application of steam to textile manufactures.

Meantime the process of electro-plating had been discovered by a mechanic named Bolsover, and this proved the foundation of a second metal industry, which has flourished ever since. "Sheffield plate" soon acquired a reputation, and then came Britannia metal in imitation of it. The manufacture of files, which is a third branch, probably grew out of the cutlery trade, for the two are found together in the Berg country, which is the corresponding district in Germany.

But all these industries were to be overshadowed in magnitude by the great steel works which came later. Like the corresponding works at Essen, they owe their origin to the invention of cast steel. The two stories are curiously alike. In both cases the manufacture of bar steel for small articles had been carried on in the neighbourhood for centuries by rule of thumb; in the eighteenth century came the development of cast iron, to be followed by cast steel. Sheffield took the lead in point of time. The father of the iron trade there was Samuel Walker, the son of a working nailer, born in 1715, at Ecclesfield. He started the "Old Nailer Smithy" with his brother Aaron, and the record of their business contains the entry for the year 1741-42: "We made about five tons of castings, I think". The output increased year by year and in 1759 it exceeded 430 tons, valued at £11,000. This firm, which moved in 1746 to Rotherham, made cannon for use in the American War and supplied the ironwork for Southwark Bridge, opened in 1819. Meanwhile Huntsman had in 1770 invented the process of casting steel ingots from crucibles, which remains one of the leading specialities of Sheffield to

this day. His foundry, or the spot where it was, is still pointed out in the heart of the town. The great works arose in the nineteenth century and developed with the growth of railways and ship-building for which they supplied materials, aided by numerous inventions including the steam hammer, the Bessemer converter, the hydraulic crane and the open-hearth furnace. The Cyclops works, now Cammell, Laird & Co., Ltd., date from 1842, when Messrs. Johnson and Cammell, who had carried on a small business in the town, moved to the present site near the railway. Their first order was for railway springs, and they began in a modest fashion with an output of a ton a week. About twenty years later they were employing some 3,000 hands. T. Firth & Sons established their works in the same neighbourhood in 1849. The Atlas works (John Brown & Co., Ltd.), followed in 1856. Mr. Brown was the inventor of a buffer spring and one of the objects of the works was to manufacture them. He also contributed largely to the development of the local ore by erecting a number of puddling furnaces. When rolled armour plates were introduced about 1860 or a little earlier, these firms made Sheffield the greatest seat of the industry, and it retains that position to-day. The amount of Bessemer steel turned out at Sheffield had reached seventy tons a day before the exhibition of 1862. The other great works of the same character (Vickers, Sons & Maxim, Ltd.), were established in their present home in 1867; but the firm had existed before, originally as Naylor and Sanderson, and later as Naylor, Vickers and Co. The name Naylor suggests a descent from one of the old hand industries of Sheffield. Another prominent concern is Hadfield's, which has recently borne witness to local vigour and enterprise by the production of manganese steel and other metallur-

gical advances. The number of persons employed in the principal industries was in 1901 : Iron and steel and engineering, 23,154 ; cutlery (including saws), 15,609 ; electro-plate, 6,934 ; file-cutting, 5,266. There are also some other small iron industries—wire, nuts and bolts, stoves, etc.—and some large coal mines within the borough. Between 3,000 and 4,000 men are employed in coal-mining. Women are largely employed in electro-plating (3,576), cutlery (2,548), and file-making (1,399), but the great majority of them are unmarried girls.

As an industrial town Sheffield presents some peculiarities. The factories and workshops pervade it ; they are scattered about everywhere, even in the very heart of the city. I do not know any great manufacturing town in which a precisely similar state of things is found. There is usually a more or less defined area in the centre devoted to other purposes and free from factories, which are rather grouped on the outskirts or in some special position, as along the river at Elberfeld-Barmen, but no such area can be defined at all in Sheffield. The larger and newer works are grouped on the outskirts, it is true, and chiefly along the railways in the valley of the Don, where the river flows eastward out of the town ; but the older ones are everywhere. There is nothing in the nature of a plan about Sheffield ; it has no *place* or central space with the principal public buildings and streets near it ; it hardly has a principal street at all, and that which there is rather runs away from the centre. This is not said in a depreciatory sense. The peculiarities of Sheffield lend it character and are very interesting. They arise out of its past, and quite plainly tell the story. The old streets are narrow and of a unique irregularity ; they present all curves and angles and run in all directions. This marks the old cutlers' settlement, and

it is not a mere coincidence that Solingen is built on the same planless plan. It is a small town and still quite old-fashioned, but one can see that Sheffield was once exactly like it, and why. Both are very hilly and the streets go all ways, because once little streams ran down the hills and the craftsmen fixed their wheels wherever it was convenient. As one passes from the centre to the circumference one moves also from the old to the new, and the character changes. The streets become long and straight and ordinary. The town has climbed the hills which once surrounded it, except for the eastward opening in the river valley. In some directions the streets run bare and ugly up the hill, but in others there are extensive woods and playgrounds. Westward, following the general law, lie exceptionally attractive suburbs, where the wealthier residents live. No doubt the reason why the best residential quarters always move out in a westerly direction is that the prevailing wind blows from that quarter, and the people who can afford it choose the windward side to escape the smoke. Changes are taking place too in the more central area. Streets are being widened and improved, and new public buildings are being erected. St. Paul's Church and the new Town Hall together form a striking group on the chief thoroughfare, where the best shops are. Sheffield is in process of becoming a handsome town in that direction, or handsome for England. The Town Hall, built at a cost of £180,000, is very effective, though not quite so effective, I think, as that of Elberfeld, which cost just the same.

It cannot be denied that improvements are badly needed. Much of the housing is very unsatisfactory. The houses in the inner areas are old and insanitary, and the nuisance from smoke is very great. In the medical officer's report for 1901 I find that the number of premises where sanitary

defects were found was 9,061; twenty-nine dwelling-houses were reported "unfit for human habitation"; forty-nine "dirty"; ninety-six "overcrowded"; and 1,116 "damp or dilapidated". The proportion of cottage dwellings is considerably less than in any of the industrial towns previously described, as the following figures, compiled from the census by the medical officer, will show :—

Town.	Percentage of small houses.
Sheffield	50
Salford	54
Blackburn	54
Manchester	55
Bolton	59
Halifax	61
Bradford	68
Huddersfield	68
Oldham	73

There appears to be some correspondence between this housing factor and the amount of infant mortality. In Sheffield the mean figures for fourteen years (1888-1901) is 184 to 1,000 births, which is much higher than in the Yorkshire textile towns, where a far larger number of married women are employed in factories, but where the proportion of cottage housing is also higher. And it is significant that infant mortality reaches the highest point of all at Preston, where the proportion of small houses is very low, only 40 per cent. In Blackburn and Salford, which come next to Preston in regard to infant mortality, the proportion of small houses is also comparatively low. The facts are not sufficient to justify a confident conclusion, but so far as they go they suggest that the highest infant mortality is found where factory employment of women is combined with tenement housing.

I do not wish to overstate the case with regard to house accommodation in Sheffield. There are good working-class

houses ; indeed the newer ones are very good, but the rates are high and consequently rents are dear. Inferior four-roomed houses in the older parts of the town may be had for 4s. a week, but the statement of a very intelligent workman was that "no decent four-roomed house could be got for less than 6s. a week". He had tried to get one of those built by the Corporation, but the rent with rates was 7s. 6d. a week, and beyond his means. The density of population for the whole borough is 17·4 to the acre, but in the most crowded districts it rises to 137·6 to the acre. The average number of persons to a house is 4·8, and of the population occupying houses of less than five rooms 21 per cent. were overcrowded in 1901.

With regard to smoke Sheffield is, I think, the worst of all our towns. The great source of the nuisance is the large steel furnaces. Fortunately they lie on the eastward side and to leeward of the prevailing winds, so that the smoke is more often blown away from than into the town ; but in their immediate vicinity it is exceedingly bad. It comes down the street in dense waves that seem almost solid. Efforts are made to stop it and some improvement has been effected, but the problem is not easy. The medical officer remarks on the subject : "The attitude which has hitherto been taken up by the smoke producers in Sheffield as regards these furnaces is that a manufacturer may send out as much smoke as he likes, whether this smoke is preventable or not, and also that any interference with the amount of black smoke which he may desire to send out would ruin the trade of the city. The contention is often put forward that it is to the interest of the steel manufacturer to prevent unnecessary black smoke on account of the loss that this occasions. In actual practice this is not the case. It is found that one workman will produce enor-

mously more black smoke than another when using the same furnace and the same materials. Again, the same workman will produce much more smoke with one variety of coal than with another. Observations extending over a long period and on various chimneys tend to confirm the opinion that much of the black smoke now sent into our atmosphere from metallurgical furnaces is preventable without in any way endangering the quality of the steel."

The peculiarities of the town, derived from its past, extend to the factories, which are also to a large extent old-fashioned. The cutlers' trade, in particular, clings with singular tenacity to the old conditions, and it enables one to realise in some degree what they were in the days, lamented by theorists, before the rise of the detested "factory system". It is still carried on very largely by men working at home or in small workshops under small employers, or "little mesters" as they are called in the vernacular. The sanitary authority has 1,200 such workshops on the register. Many of them are in large tenement buildings, the owners furnishing room, power and light, for which the workmen pay rent. Here they carry on for the manufacturer one or other of the various distinct processes involved in the making of cutlery, and are paid by the piece. The health conditions are for the most part very antiquated and often exceedingly bad, if judged by modern standards; many of the premises are old and dilapidated. There are also regular factories, in which all the processes are carried on and a large number of hands employed; here the conditions are better though the old method remains. Some of them are very picturesque. The forges, for instance, in a factory, are like a little village, and remind one of a scene from the opera more than anything else. Every man has a little house to himself with his forge, bellows

and water-tank at the side, and his anvil in front before the open window. Here he plies his craft exactly as his forefathers did centuries before, and a very skilled craft it is. The hammering out of a knife-blade from a bar of steel and adjusting its temper, by the ordeal of fire and water, precisely to the particular purpose for which it is intended, require a hand, an eye and a judgment that no machinery can replace or imitate. Machine-made cutlery is rubbish, as every traveller in America knows to his cost. Grinding is another highly-skilled craft and, unfortunately, a very unhealthy one. In dry grinding the dust sets up chronic bronchitis and emphysema, and in wet grinding the damp fosters phthisis. Much has been done in recent years to improve the conditions of work, and grinders live much longer than they did formerly; but the industry is carried on mainly by men working on their own account and paying rent for their "stalls," or the stones at which they sit. This makes the enforcement of better conditions a difficult matter; it entails interference with the workmen, who are the "occupiers" and therefore responsible in the eye of the law. In fact, the more nearly the conditions approach to the old method of home work the worse they are and the more difficult to improve. Another Sheffield trade and a still more unhealthy one—file-cutting—emphasises the same truth. Speaking of lead-poisoning in this trade, Dr. Thomas Oliver observes :—

"While it is to the fact of the work being conducted on a lead bed, and the want of personal cleanliness on the part of the file-cutter, that plumbism is mainly due, there are, as seen in Sheffield, contributory causes in operation which tend to increase the harmfulness of the occupation. One of these is that file-cutting is often a home industry. The work is frequently carried on in the living room or kitchen

of a dwelling house. Domestic and other duties come to be disregarded by the mother, for she, no less than the other members of the family, interruptedly lends a hand to increase the income of the home. Readers of this paper are prepared to learn that work under these circumstances is usually carried on in houses of the poorest description and that, as a consequence of the dangerous character of the occupation, the unhealthy atmosphere of the workroom and the constitution of the workers having become undermined through poverty, lead poisoning is not only extremely severe, but may affect those who are simply living in the house and not actually engaged in file-cutting at all."[1]

Hand-cutting and home work are, however, being rapidly superseded by machine cutting in the factory, and with them lead-poisoning will disappear. The making of files by machinery is one of those importations from America which have been resisted by the conservative English workman, although he can earn more money more easily and without danger to health by the new than by the old process, and although the very existence of his trade is menaced by American competition. I refer to this subject again in the chapter on Trade Unions.

In the great steel works the conditions are, of course, entirely different; but these too cannot be exonerated from the charge of being antiquated. The newer workshops, and notably those of Vickers, Son & Maxim, are quite admirable in every respect and are not excelled by any shops of the same kind anywhere; but some of the departments in the other great works are quite out of date, not so much in equipment as in construction and organisation. They are dark, dirty, ill-kept, inconvenient and exposed to the weather. But the reader must not infer from that statement

[1] *Dangerous Trades*, p. 344.

any charge of apathy or incompetence on the part of the management. On the contrary, I have nowhere been more impressed than at Sheffield by the knowledge, mental alertness and general capacity to hold their own, of English manufacturers. Nobody can tell them anything they do not know about their business. The truth is that the works are old; they are not ruinous or dilapidated but merely out of date. They require re-organising, and that process is going on. There is no lack of energy or of knowledge. The plant has already been remodelled to a large extent and includes many of the latest appliances, such as electric cranes, gas furnaces and hydraulic presses of the largest capacity. It is a great business that is carried on here, and the very antithesis to the ancient handicrafts preserved in the cutlery trade. Of all the processes of modern industry none are so impressive as those which deal with great masses of metal such as form the basic material from which ships of war are fashioned, armed, armoured and engined. From the melting of the steel in the furnace till it boils and bubbles, to the setting up of the finished product, the work is on a Titanic scale, and mythological names—Atlas, Cyclops and Vulcan—seem truly appropriate to the places where it is carried on. Blocks of solid steel weighing fifty, sixty seventy tons or even more are the raw material. Such a block is swung in and out of the furnaces, moved hither and thither, pressed, flattened, rolled, bent, rounded, drawn out, bored, tempered, planed, drilled, sawn asunder and much more, until after months of manipulation it emerges as the breech of a great gun, or the crank of a monster engine or a piece of armour plate several inches thick, curved to a nicety to fit its place and so hard that the sharpest steel spike struck with a sledge-hammer leaves no mark on the surface. The appliances for producing these things are of

a power which can hardly be realised and enormously costly. Perhaps the most impressive sight in all the wonderful series is the simple squeezing of a block of steel weighing fifty or sixty tons under the hydraulic press, which may be of 5,000 or 10,000 tons capacity. The mass of metal, white hot, is lifted from the furnace, swung to the press, lowered exactly into its bed under the silent monster, which betrays nothing of its nature or purpose, and looks like nothing in particular. Then a man pulls a lever or turns a handle and down it comes quite slowly, evenly and without a sound. When it reaches the glowing mass underneath, nothing happens, only the press does not stop; on it goes slowly, evenly and quietly as before, the solid steel shrinking under it before your eyes. It is the most wonderful exhibition of power without fuss that nature or man has yet achieved. There is power in the Deutschland's engines, in a 5,000 volt dynamo, in the firing of a great gun or the bursting of a charge of dynamite; there is power immeasurable in Niagara falls, in a hurricane of wind and in a flash of lightning; but in all these things there is a tremendous fuss. The hydraulic press crumples up a lump of solid steel several feet thick with a sort of silent, off-hand, sleepy indifference, as if it were doing nothing at all.

These great works form a tempting theme, but probably enough has been said for my purpose to indicate the nature of the industries carried on at Sheffield and the conditions prevailing. Wages are good. A large proportion of the men employed in the steel works are members of the Amalgamated Society of Engineers, which has seven branches in Sheffield, and the standard rates are higher than in any of the large centres except London. For smiths, fitters, turners, millwrights and coppersmiths the standard is 38s. a week; for pattern-makers, 40s.; for planers, borers and

brass-finishers, 34s. Head-men earn up to £15. The week is fifty-four and forty-eight hours. In cutlery piece-work obtains, and earnings vary accordingly, but average hands make about 37s. a week, girls from 9s. to 12s. File-makers earn considerably more, up to 50s. or more. Some forty years ago Sheffield was the scene of the worst outrages that ever damaged the cause of trade-unionism, but the unions are now quiescent.

Some points still remain to be noticed about the town. In spite of hilly ground and narrow irregular streets, Sheffield has a good service of electric trams; for short distances it is the cheapest I have met with anywhere. There are seven parks and nine recreation grounds, some of them having been presented to the town by the Duke of Norfolk and other wealthy persons, the rest have been bought by the Corporation. The covered markets are numerous and remarkable. The tide of life on Saturday afternoon and evening in these places and the adjoining streets is more striking in Sheffield and Bradford than even in the Lancashire towns. The people fill the streets so completely that there is no room for any other traffic. The number of endowed charities of various kinds is exceptional. An ancient institution is the "Shrewsbury Hospital," founded in 1616 by the Earl of Shrewsbury for aged pensioners, and there are some forty others, including two large general hospitals, one for children and a fourth for women only, in addition to three infectious hospitals maintained by the municipality. But there is a much older charity than the Shrewsbury Hospital. In 1297 the third Lord Furnival founded a trust which now brings in about £7,000 a year, and is administered by a body of trustees for the benefit of various benevolent institutions and the furtherance of education by means of university scholarships

open to boys and girls educated at Sheffield. In the commercial affairs of the town the Cutlers' Company plays a prominent part, conceded by traditional right and sanctioned by law. It enjoys the exceptional privilege of being the registering authority for trade marks on all metal goods in the district. In cutlery the system of trade marks dates from the Middle Ages, and is an important matter to-day. Inferior foreign cutlery often bears the name of Sheffield, but that is not always the fault of foreign makers. Sheffield people import the stuff and put the name on. Consequently the trade mark becomes an essential guarantee of good quality. The Cutlers' Hall contains a fine suite of rooms, which are used for all sorts of entertainments, public and private. The first hall was built in 1638, the present one dates from 1832, but it has been much enlarged in more recent years.

Among the educational institutions bearing upon industries is the technical department of the University College. The principal subjects taught are engineering, metallurgy and mining. The laboratory installation for engineering and metallurgy is exceptionally complete and the course of instruction very practical. The manufacture of steel, its chemical composition and physical properties are nowhere more thoroughly taught. There is also a School of Art, in which the artistic handicrafts are taught, but cutlery seems to depend on the old school, namely, the forge and the workshop. The industry is said to be in some danger of decline from a falling supply of skilled labour. It has been hard hit by the American tariff, which is prohibitive, and by German competition, which constantly improves in efficiency.

With regard to elementary education the distribution of school accommodation in 1901 was—Board Schools, 47,490;

Church of England, 19,639; Roman Catholic, 4,471; Wesleyan, 2,404. The denominational schools, therefore, represented considerably more than one-third of the whole. There are about 260 places of worship, of which thirty-eight belong to the Church of England. The Wesleyan Methodist denomination is particularly strong.

Sheffield is, of course, an important railway centre. The Midland Railway runs right through the great steel works and has an immense mineral depôt hard by; but the passenger stations are inconveniently situated.

Vital Statistics of Sheffield, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
382,334	33·0	20·4	12·6	202

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Convictions for Drunkenness.
—	1,796	1,219

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
38	6	12	5

Bradford and Sheffield have been selected for detailed description as representing the Yorkshire textile and metal industries respectively; and some of the other large manufacturing towns have been mentioned in passing. I cannot spare the space for a full account of any of them, but a few observations on the most important must be added to give anything like an adequate conception of the industrial resources of the county.

Leeds is not only the commercial capital, as I have already said, but also a great manufacturing centre. It ranks fifth among the towns of England, having a population of 428,968 in 1901. It is an ancient seat of manufactures, and particularly of woollen cloth; but in more recent times that industry, though still large and flourishing,

has been overshadowed by the growth of engineering works, in which over 20,000 men are employed. Leeds is actually the greatest centre for the production of engines and machines in the country, and it is specially famous for heavy machine tools. Another product in which it leads is leather. The number of persons employed in the wool and worsted industries is about 12,000. As a commercial and industrial centre it occupies a similar position to Manchester, but for a town so large and important the streets and shops are unusually mean, and the blackness attained by some of the principal public buildings is extraordinary even among English manufacturing towns. In other respects Leeds quite holds its own, and none of its rivals better illustrates the capacity of the industrial North to carry on a vigorous social life beneath an unattractive exterior and to temper with intellectual and æsthetic interests the daily toil of the forge, the foundry and the workshop.

Halifax, with a population of 104,933 comes next to Leeds and Bradford among the West Riding towns, and is probably the most prosperous of them all. It enjoys the advantage of having an unusual variety of industries, including wool and worsted, engineering and machinery, cotton, carpets, dyeing and bleaching, small metal trades and chemicals. Crossley's vast carpet mills have already been mentioned. The town, romantically situated on very hilly ground, bears all the marks of prosperity and has a low death-rate, but it is also unenviably distinguished by the lowest birth-rate among all the large towns of England. In the course of twenty-five years the rate has fallen 46 per cent. Halifax conspicuously illustrates the most disquieting feature of national life in England to-day.

Huddersfield runs it close in this respect. Halifax,

Huddersfield and Bradford form a group at the bottom of the list of great towns in regard to birth-rate. In 1901 the figures were: Bradford, 23·0; Huddersfield, 22·7, and Halifax, 22·3; and these excessively low rates are all the more striking when compared with the other three great towns in Yorkshire, thus: Leeds, 30·0; Sheffield, 33·0; Hull, 33·3. Like Bradford and Halifax, Huddersfield is a textile town, having over 17,000 persons employed in that group of manufactures. About one-half are women, but only a small proportion of these—rather more than one-eighth—are married. The principal branch of textiles is woollen, as distinguished from worsted, goods. Huddersfield is the chief seat of this industry.

Middlesborough lies apart from the rest of industrial Yorkshire, both geographically and otherwise; but it is too important to be omitted altogether from our survey. Situated in the north-eastern corner of the North Riding, it is separated by the whole length and breadth of the county from Sheffield, which lies in the south-western corner; and, unlike the rest, it is a modern town and a port

Its industrial importance is due to its position in the Cleveland iron district, which produces about half the ore mined in England. The annual output of the Middlesborough blast-furnaces, which are quite up to date and second to none in equipment, is about 2,000,000 tons. This is the principal industry, but other subsidiary iron and steel works, particularly the manufacture of tubes and wire, have grown up around it. Some 8,000 men are employed in the various metal industries. The population in 1901 was 91,302 and the character of the town is seen in the unusual fact, only observed in a few similar places, such as Gateshead, Barrow and Warrington, that the males considerably outnumber the females.

The South Staffordshire District.

The York and Lancaster area, with its textiles and metals, just described, has a parallel in the Midlands, where Birmingham corresponds with Manchester or—more nearly, perhaps—with Leeds, Leicester with Bradford, Kidderminster with Halifax, Wolverhampton and its neighbours with Sheffield. I do not mean to say that the parallel is exact; the industries and other features are different; but there is a general resemblance. We have here, too, a fairly well-defined area containing a number of large and small towns which are the seats of textile and metal manufactures, exhibiting the same tendency to specialisation and characterised broadly by the same features. I do not think it worth while to give even a brief account of all of them. It would add very little to the picture already drawn, and would be to a large extent mere repetition. Industrial life in the Midlands is in its main features very similar to that of the North. But there is one region in this area which ought not to be passed over for two reasons. It differs considerably from anything yet described and it represents a class. I call it the South Staffordshire or Wolverhampton district, but it is better known as the Black Country. That name, however, is misapplied to the towns and centres of population here situated. They really form a sort of ring round the "Black Country" proper which is a remarkable area of coal and iron, once active but now worked out. It is a scene of unspeakable desolation. The face of the land is covered with vast mounds of cinders, shale, slag and other refuse, with deserted coal-pits and ruined works standing beside them. Once the whole region throbbed with life, and by night the red glare of the furnaces lit up the murky sky. Then it was called the Black Country appropriately enough. It is black still but with the blackness of a fire

burnt out and more weird than before; for to the defacement of the earth and the disappearance of meadow and tree beneath mountains of refuse is added the depression of silence and decay. A sense of death hangs over the deserted remains of a once busy scene; and as one skirts this strange region in the misty twilight of a winter afternoon, one seems to be looking out over the approaches to hell itself.

But the towns which lie round its edge are still the seat of a vigorous life. They are not large; Wolverhampton, the largest of them, had less than 100,000 inhabitants at the last census, and most of them are much smaller. They form a chain of small and medium-sized towns wholly industrial in character. The following list gives the principal ones and their respective populations (1901):—

Town.	Population (1901).
Wolverhampton	94,487
Walsall	86,430
West Bromwich	65,175
Dudley	48,733
Tipton	30,543
Wednesbury	26,554
Bilston	24,034
Willenhall	18,515
Darlaston	15,395

Some of these names possess a minor degree of fame, but most of them are probably quite unknown to the reader. The smaller towns are very humble places, but industrially they form an interesting and characteristic group. With the exception of Walsall, which carries on the manufacture of saddlery upon a large scale, they are given up to iron, steel and coal, and more particularly to the small iron industries, which are of a varied character. The following table, which gives the number of males over ten years of age in 1901, shows broadly the distribution of the industries:—

	Iron and Steel.	Engineering.	Miscellaneous Metals.	Cycles.	Leather.	Coal and Shale Mines.
Wolverhampton .	1,640	3,467	4,827	1,231	109	88
Walsall . .	1,535	2,332	2,098	211	5,644	2,487
West Bromwich .	2,745	3,052	2,880	559	—	1,179
Wednesbury .	1,431	1,318	1,777	442	—	147
Bilston . . .	1,309	866	1,635	32	—	455
Willenhall . .	197	803	2,937	35	—	218
Darlaston . .	402	579	1,966	50	—	219

Staffordshire ranks second to Yorkshire in iron and steel manufactures, and first among the counties in saddlery and harness. The number of women employed is small, except at Walsall, where 3,932 are engaged in the leather industry. An immense stimulus was given to this trade by the South African War and fortunes were freely made. Factories sprang up, chiefly started by workmen, who in a short time became employers on a considerable scale. This is a modern repetition of the old process of industrial development in England. It was essentially a process of transformation from workman to employer, and it resulted in the formation of a large number of small concerns. The "factory system" was, in truth, the creation not of the capitalist but of the workman; the enterprising, intelligent, industrious and thrifty workman who started business on his own account as soon as he had saved a few pounds. The effects of the process are nowhere more clearly seen than in the Wolverhampton district, except in "the Potteries" at the other end of the same county. I am not able to give the space for an account of the Potteries, and I have chosen the Wolverhampton metal district for description partly for that reason; it must do duty for both. Although the industries are so different, both districts have essentially the same features. Both consist of a string of towns, which are all occupied in making the same class of things but are

specialised among themselves within that class; both have some new and modernised factories of considerable size, but both are in the main dependent on a large number of small and old-fashioned concerns; both are inhabited by a population almost wholly industrial and living amid surroundings entirely devoid of natural attractions. In saying this I must make an exception of Wolverhampton, which has many attractive features and on one side turns its face away from the industrial element to become an agreeable residential town merging into very pretty country. But it is an ancient place with associations remote from the manufacturing interest. Walsall, too, is different. It is a town on the make and in process of transformation. The marks of recent growth and prosperity are numerous, and the leather industry is not of a disfiguring kind. Walsall shows signs of becoming quite a superior town of its class. But the others are singularly unattractive. With the exception of some of the old seaports, I do not know any English towns more dingy and depressing. On the surface life appears here to be wholly dreary. The streets are mean; they consist almost entirely of small houses, plain, grimy and not infrequently dilapidated. There is very little green, few open spaces, no fine buildings. The factories are for the most part small and old-fashioned, and the presence of numerous foundries fills the air with smoke.

But the observer who looks below the surface finds this appearance deceptive, and the more carefully he looks the more clearly he sees that such external features have not the importance we are apt to attach to them. What people really like and miss is what they are used to. An eye accustomed to trees, fields and flowers finds these places dreary, but the natives do not. It is the fields which they find dreary. Hence much misplaced pity and vain effort.

Kind-hearted persons who feel the charm of space and verdure fancy the townsfolk pine for these things, but it is a mistake. I remember an old 'bus driver, who had driven along the streets of London for sixty years. In all that time he had never been south of the Thames, and had only once been out of London. He then had a week's holiday, and went into the country to some relatives, but after three days he could stand it no longer and went back to the streets. With individual exceptions town-dwellers have no sympathy with country things; they love the pavement and the long rows of identical houses. Any deviation is distasteful to them. I have known the people in a growing London suburb petition to have trees cut down because they broke the well-loved uniformity of the streets to which they were accustomed in the more urban quarters whence they came. The speculative builder who begins the process of "developing an estate" by destroying every tree on the ground, and goes on by making every house exactly like every other, understands his clients better than those who abuse him. There was one of some note who did not follow this rule. He left the trees, built separate houses of good materials and design and left space about them; he was put in jail. His successor, who did the opposite in every respect, is in Parliament. Truly what is one man's meat is another man's poison. An expedition into the country pleases the townsman as an expedition, but if you observe the behaviour of townsfolk in any resort you will find that very few indeed care to penetrate more than a few yards from the highway. They still herd together near the main road and the public-house and keep in the crowd. Sylvan solitude repels them. So, too, the bicyclists who ride out of town. They pass by fields and woods and rarely turn aside or stop for the most exquisite scenery; they pound

for ever along the road to a greater or less distance according to their ambition, pile their machines up at the public-house which is their goal, and then pound back again. The children, too, care nothing for the country. They like going because children like going anywhere, and I have no doubt that the country holidays on which so much effort is now spent are good for their bodies and minds; but let no one think they pine for the fields. The street is their real delight and favourite playground, as a very acute and experienced observer has pointed out.[1] They prefer it to the parks, and are never so happy as when playing in the gutter. Even country children prefer the village street to the fields and make it their chief playground, heedless of bicycles and motor cars. In truth it is the country that town-dwellers find dull and dreary; they have no feeling for country things, which are to them only things to be misused and destroyed. A very brief experience at the best time of the year exhausts the interest. Those of them who go into domestic service show the real bent. Be the place never so good they will not stay in the country.

And here in these Black Country towns, which look so dreary to other eyes, the people need no pity. I came across a curious proof of affection for the locality in the United States. At one of the large steel works near Pittsburg was a man who came from Wednesbury, which perhaps is the dreariest of them all. He occupied a superior position and earned a good salary easily enough; but his thoughts turned to Wednesbury. "If any one would give me five dollars a week," he said, "I would go home and live like a gentleman." He was a travelled and intelligent man of his class, and he was quite satisfied with the Black Country and the way of living there. Men

[1] *Studies of Boy Life in Our Towns*, edited by E. J. Urwick.

who have made money, and are well to do, go on living there in the same small way from choice. They enjoy life in spite of their surroundings; and it is a pretty vigorous life. I have nowhere seen men of finer physique than many of those working in the furnaces, forges and rolling mills in these towns; and the birth-rates are far higher than in Lancashire and Yorkshire. The mean annual birth-rate in the ten years 1891-1900 was in the Staffordshire urban districts, 35·5; at Wolverhampton, 33·87; at Walsall, 35·2; at Willenhall, 38·5; and at Bilston. 41·5 per 1,000. There is plenty of vitality here, and very little evidence of decline. So late as 1899 the birth-rate at Bilston was 40·5 per 1,000. That is a remarkable fact in view of the really alarming decline which has taken place in Yorkshire and Lancashire. Nor are these higher birth-rates accompanied by correspondingly higher death-rates, but rather the contrary. For the same ten years the mean annual death-rate was—Wolverhampton, 21·22; Walsall, 19·8; Willenhall, 20·9; Bilston, 22·4, per 1,000. Consequently the mean annual excess of births was—Wolverhampton, 12·65; Walsall, 15·4; Willenhall, 17·6; Bilston, 18·1 per 1,000. Here we have a vitality approaching that of the German industrial towns, or not far short of it. Thus we see that an uninviting exterior may conceal more real industrial strength than a far fairer outside. In 1901 the death-rate at Wednesbury was only 14·5 per 1,000, and the infantile mortality only 154 to 1,000 births.

In one of the smaller towns a clergyman gave the people a rather remarkable character. "Religion is regarded here," he said; "the people are religious minded; they are a capital set, honest, truthful and fearless; what they undertake to do they always carry out." This gentleman has an unusually real and intimate knowledge of

his people. Brought up as an engineer, he has worked at the bench alongside of the men, and he is as free from sentimentality about them as he is faithful to the obscure but satisfactory work to which he devotes his great ability—a rare and fine man. The whole place would be called a slum if it were in London. Housing is bad, though cheap, the rent for a four-roomed cottage being 4s. 6d. a week. But, as my clergyman truly observed, the people like squalor. They remain in wretched houses when they have become comparatively wealthy, and take in lodgers when they have neither need nor room for them. But they are well fed and not very much given to drink.

In consequence of the variety of industries carried on it is not easy to summarise the facts about wages. The engineers' trade union standard is low in this district, being 32s. a week for most groups. The week is fifty-three and fifty-four hours, and I found that to hold good of the local industries in general. Blast furnace men, puddlers and steel workers earn more—up to £2 and £3 ; head men get as much as £8 a week. But in the smaller metal trades, which are the most characteristic and interesting, earnings are lower. Several authorities independently gave the average as 25s. a week. Girls earn from 7s. to 15s., women up to 20s. or even 25s. Among these trades perhaps the most prominent is locks and keys, the seats of which are Wolverhampton and Willenhall. It affords a typical and highly instructive example of an old English industry threatened by foreign competition and newer methods of manufacture, but clinging to the old. American ingenuity has devised a new type of locks and keys eminently characteristic of the national genius in invention. In place of the hand-made, solid and durable but heavy and cumbrous articles manufactured in this country, they produce a light

machine-made one. It is not nearly so strong, but it answers the purpose and is far more convenient. American locks are already largely in use in England, and their merits have only to be generally known for them to become universal. It is fortunate for the English trade that people are so conservative in domestic matters; but for this it would be in a very bad way. It stands, indeed, on the edge of a precipice. The Germans have learnt the lesson and are in the market too. The English manufacturers are perfectly aware of the situation and have introduced American machines and methods, but the workmen dislike and resent the change. They ridicule foreign competition. While I was in the neighbourhood they struck for a 10 per cent. rise of wages. A case of American and German locks was placed in the Free Library at Willenhall for their instruction, but the only notice they took of it was to threaten the librarian with personal violence until he removed it. "Why, these locks are cast," they cried with supreme contempt on being shown some; "if you drop them on the ground they would break". They very likely would, but it is not the function of locks to be dropped on the ground. In its proper place a cast lock will last just as long as a wrought one. At the same time the English workmen have lost the skill they once possessed in making their own locks. An old manufacturer in Wolverhampton, who had himself been brought up at the bench, gave me an interesting proof. He showed me locks made thirty years ago which were far better than any made now, but those made fifty years ago were still better. They cannot be reproduced to-day. A dealer in London sent him two old locks and wished to have a number made exactly to sample, price was no object. The manufacturer sent for his best workman—and there is no better, he said, in the trade—showed

him the locks and asked him to make the set ordered. The man looked at them and said: "What am I to get for them?" "Name your own price." "Well, I would like to have a good look at them first." "All right, take them away." He took them away, came back a day or two later and said: "I can't do it. These locks are too good; I can't make one like them." The reason given for loss of skill is that men are not brought up to the work as they used to be, through abandonment of the apprenticeship system. The same manufacturer, who had been in German workshops, said that the German mechanics are now better than the English.

I am afraid the men in this district are not very intelligent or enterprising. Another manufacturer, who employs about 300, had made a standing offer of £50 for ideas from workmen; but in two years it had not produced a single bid. He also offered to take twenty men to the lakes if they would save £3; not one saved a penny. The average earnings of men in his factory are over 30s. a week. But I will give the other side fairly. Another manufacturer gave his workmen a different character: "They are a capital, intelligent set of men," he said. This, however, was not in the same trade or in the same place, though next door to it.

An important branch of manufacture in the district is that of tubes. It is carried on at Wolverhampton, Walsall and elsewhere, but premises and plant are generally somewhat old-fashioned; and the same must be said of the large iron and steel works. On the other hand, I have nowhere seen a more modern or better appointed factory than the electrical engineering works of Thomas Parker, Ltd., at Wolverhampton. The largest concern in the district is, I believe, the Patent Shaft and Axle Company's works at Wednesbury,

where about 3,000 men are employed. They make a variety of things, including bridges, for which the Company has secured some notable contracts in competition with American works. Bridges are also made at Darlaston. Nuts and bolts, rivets, nails, chains, wire-netting, gas-fittings, rasps and files, curry-combs, tools, vices, brass cocks, enamelled plates and letters and hardware are among the miscellaneous metal manufactures of the district. Wednesbury is famous for nuts and bolts; Bilston for hardware. There are two or three points of interest about the last. Frying pans and the like, which used to be hammered out, are now stamped or pressed; but the knowing housewife still looks for the marks of the hammer, so they are added afterwards, just as a little sand is added to sponges. The tinning and enamelling of hollow ware is a "dangerous trade" under "special rules," and I must say it needs them. The articles are plunged into a trough or tank containing molten lead and tin, from which dense fumes arise. They are very difficult to avoid, and in my humble opinion the conditions under which this process is carried on stand far more in need of attention than the corresponding process of dipping in pottery works which has been the subject of so much agitation. It is characteristic of our haphazard national procedure that some trades are regulated too strictly, and others, more injurious to the workers, are neglected. There is no system or principle in the matter; it is merely a question of clamour. But perhaps I ought to say "has been," not "is"; for there are signs of a change. The annual report of the chief inspector of factories for 1902 contains a very full report on the whole subject of the enamelling of metals with much interesting information about it and numerous recommendations. The tinning process is included in this inquiry. The authors appear

to have had lead poisoning wholly or chiefly in mind. No doubt it occurs and is important; but I doubt if it is everything, and the failure to find lead in the fumes from the tinning bath does not dispose of the matter. I have seen no manufacturing process which I should personally engage in with so much reluctance. Most of the "dangerous processes, and conspicuously those which have attracted most attention, are rendered quite innocuous by a little elementary cleanliness and care; but I should be very sorry to have to stand over the tinning bath. Lacquering is another disagreeable, if not dangerous, process; the fumes produce a singular and very unpleasant effect; but I do not find any mention of it in the treatise on dangerous trades edited by Dr. Oliver.[1] Chain-making is carried on chiefly at Cradley Heath, a small village over the border in Worcestershire, and to a large extent by "out-workers" in small domestic workshops. A considerable number of women are employed in it.

These notes though rather discursive will, it is hoped, give the reader a general idea of the nature of the very miscellaneous industries carried on in the district. The trade union report, given me in Wolverhampton, is that the Factory Inspectors do see that the law is carried out, but that factory conditions are susceptible of improvement. Complaint is made of open sheds and corrugated iron buildings, and observation supports it. As I have said, premises are generally antiquated, though there are some conspicuous exceptions.

To turn to other conditions, the strong vitality which I have shown to exist in spite of depressing surroundings, finds a counterpart in a vigorous common life. All the towns, including the smaller ones, are completely provided

[1] *Dangerous Trades*, John Murray.

with the regular municipal institutions, more completely than places of much larger populations in the South or in the London suburbs. They all have technical and art schools and free libraries, baths, electric light and electric trams. They are linked up by the electric tramway service as well as by several railroads. They nearly all have theatres; Wolverhampton has three, including a music hall, Walsall two, one of which is an extremely handsome house, and even so small a place as Bilston, with its purely industrial population of 24,000, has one. Wolverhampton has a very fine art gallery, which is much frequented; the number of visitors in 1902 was 159,818. Walsall also has an art gallery and museum. Parks and playgrounds are numerous; Wolverhampton and Walsall have each 100 acres devoted to this purpose. The people are musical too; musical societies and clubs abound.

Not less store is placed upon religious teaching in elementary schools here than in the other industrial centres passed in review. In Wolverhampton the number of school places in 1902 was—Board Schools, 5,838; Denominational Schools, 12,646, of which 9,796 were Church of England, 2,150 Roman Catholic and 700 Wesleyan. The number of places of worship is thirty-two.

With regard to housing, I have said above of one of the smaller towns that it is bad. I meant that old, dilapidated and insanitary houses are numerous there; and that is to a varying extent true of others. But I do not think that the housing in general can be said to be bad in the district. I have the reports of the medical officers for several of them before me, and they do not speak of bad housing except in the case of Bilston, where the medical officer complains of great difficulty in dealing with insanitary property. Here the infantile death-rate is very high. It

is also high at Willenhall and still higher at Darlaston, but, as I have already pointed out, the birth-rates are also very high, and high birth-rates are always accompanied by much infant mortality. The density of the population is high in Wolverhampton, but not in the smaller towns, as may be seen from the following table:—

	No. of persons to the acre.	No. of persons to a house.
Wolverhampton	26·7	4·9
Walsall	11·7	4·7
Bilston	12·8	4·7
Willenhall	14·8	5·1

The high density at Wolverhampton appears to be due to the existence of a large number of courts in which the houses are crowded together. A very remarkable investigation of these courts, which are situated in two districts, was carried out in 1901. I know of no inquiry into housing so minute and exhaustive. The principal results may be summarised as follows:—

Courts in Wolverhampton, 1901.

	East District.	West District.
Number of courts	236	148
Number of occupied houses	1,387	814
Population	5,607	3,122
Persons to the acre	384	318
Occupied houses, wholly in courts	888	561
Back-to-back houses, do. do.	228	123
Damp or dilapidated houses, do. do.	542	296
Average weekly rent:—		
Back-to-back houses	2s. 10d.	2s. 11d.
Single houses	2s. 8½d.	2s. 10d.
Through houses	3s. 3d.	3s. 3d.
Average weekly income of occupants:—		
Back-to-back houses	20s. 2½d.	19s. 9d.
Single houses	20s. 7d.	21s.
Through houses	22s. 7d.	22s. 10d.
Death-rate (per 1,000)	28·54	26·71

The mean death-rate in the whole borough was 16·69; in the courts it was 27·84. This strikes me as surprisingly

low. The population includes the poorest, the density is very high and the proportion of damp and dilapidated premises very large. Within the houses, however, there was not much overcrowding. The table does not give the number of rooms in each house, but most of them contained from two to four rooms, a few five and six. The rents are very low; for some of the four-roomed houses the occupants were only paying 2s. 10d. a week, and I find six-roomed through houses rented at 4s. 6d. The rent for two-roomed houses was usually 2s. 6d., or 1s. 3d. a room, and that appears to be the highest. Rents are altogether low in Wolverhampton, although the rates are not. I found the secretary of the Trades Council living in a very good six-roomed house at 6s. a week. He said it was exceptional, but inquiry hardly confirmed that.

VITAL STATISTICS OF WOLVERHAMPTON, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
94,487	31·9	16·7	15·2	162

MISCELLANEOUS STATISTICS.

Police Force.	Liquor Licences.	Charges of Drunkenness.
103	476	410

Churches (Established).	Theatres.	Newspapers.	Public Libraries.
14	3	6	1

VITAL STATISTICS OF WALSALL, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
86,430	34·19	17·59	16·6	174

MISCELLANEOUS STATISTICS.

Police Force.	Liquor Licences.	Proceedings for Drunkenness.
78	354	251

Churches.	Theatres.	Newspapers.	Public Libraries.
—	2	—	1

Vital Statistics of other Towns, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
		Wednesbury.		
26,554	33·0	14·5	18·5	156
		Tipton.		
30,543	37·8	15·5	22·3	144
		Bilston.		
24,034	36·5	20·7	15·8	221
		Willenhall.		
18,515	35·4	20·4	15·0	211

CHAPTER III.

INDUSTRIAL DISTRICTS IN GERMANY.

THE great manufacturing industries are more widely distributed and less concentrated into specialised areas in Germany than in England. This, no doubt, arises from the fact that it has only recently become a thoroughly homogeneous country. In the past each division was compelled to develop industries of its own as far as possible. Excepting, therefore, the great agricultural provinces on the north-eastern and eastern side of Prussia, there is hardly any portion of the Empire in which the leading branches of manufacture are not carried on to some extent. But the causes pointed out in the previous chapter, which tend to concentration in particular localities, have made themselves felt since the establishment of the Zollverein, the development of the railway system and the consolidation of the Empire. The great industrial expansion of the last thirty years has not been equally distributed. Certain localities, more favoured by nature than others, have acquired a constantly increasing prominence. Foremost among these is the Rhineland province of Prussia. In 1895, the date of the last occupational census, it stood first among the provinces of Germany both in textiles and in the production and manufacture of iron and steel, it was second in leather manufactures and glass, third in paper, and fourth in pottery. Next comes the Kingdom of Saxony, which was only just behind Rhine-

land in textiles as a whole, and easily first in cotton and wool, first also in machinery and paper, fourth in leather and glass, fifth in pottery. These two areas, which are also first in the production of dyes and fine chemicals, correspond in many respects with Yorkshire and Lancashire respectively, and are the seat of the most formidable competition with England. I have therefore chosen them for purposes of comparison. Next in importance are Bavaria and the Prussian provinces of Silesia and Brandenburg. Bavaria stands first in leather and glass, second in pottery, third in engineering and in cotton. In Silesia, again, all the chief industries are carried on upon a considerable scale. It is the principal seat of the linen manufacture, and, as such, corresponds with Ulster; it accounts for an increasing share in the total product of Germany, and is the only district which showed an increase in the linen industry between the last two occupational censuses. In cotton, on the contrary, it is not holding its own in face of the great development of Rhineland. These movements illustrate the tendency to localised concentration in modern industry. In the production of iron and steel Silesia ranks next after Rhineland and Westphalia and has enjoyed a much more rapid rate of increase than either in the last twenty years. In machinery and engineering it ranks fifth. The province of Brandenburg, which includes Berlin, has also developed rapidly in the latter branch of industries, and in other iron and steel manufactures. The largest electrical machinery works in the world are in the neighbourhood of Berlin. The chief textile industry in this province is wool and worsted, in which it is surpassed only by Saxony and Rhineland. In pottery it ranks first, and in leather third. Of the other manufacturing districts the most important is Alsace-Lorraine, mainly by virtue of

the cotton industry, in which it ranks next to Saxony. The rest are of minor, but by means negligible importance. Among them Westphalia must be counted. The greater part of this province is of an agricultural character, and resembles the North and East Ridings of Yorkshire, but like them it has a West Riding, which lies contiguous to the Rhineland border and is geologically continuous with it. This is a hilly, mining district, containing some large iron and steel works, and some considerable textile centres forming a kind of annexe to its more industrially important neighbour. The two can hardly be separated, and in what follows, some account is taken of Westphalia.

I regret having to leave Brandenburg out of my descriptive section, and the more because Berlin is one of the greatest manufacturing cities with some of the finest works in the world; but, like London and New York, it contains so many other non-industrial factors that I shall treat it in the same way, and dismiss it with a brief notice.

Berlin.

On the whole Berlin is less representative of Germany than are most capitals of their respective countries. It is newer, for the empire of which it is the centre is new. Until recently those centripetal currents of life which usually flow to the capital have been largely distributed elsewhere, and they still are to a considerable extent. But because of its newness Berlin embodies and expresses all the more clearly some latter-day national tendencies. In the first place it represents the worst. Vice and crime always gravitate to the capital and are concentrated there, for in the larger aggregations of people the degraded find more companions to keep them in countenance. This is conspicuously the case with Berlin, which has become the

chief pleasure town of Germany and the great centre for wealthy persons in search of amusement and dissipation, with all the crew of parasites who wait upon their pleasures. Consequently the old-fashioned German virtues, to which the country owes its strength, have comparatively little hold in Berlin; the moral tone is more lax, the standard of comfort and the cost of living are higher, and the birth-rate is lower than in the genuine industrial communities. One sees here the worst results of the demoralisation caused by prosperity. The Germans have a great capacity for the grosser pleasures of the flesh, and there is no more profligate town in Europe than Berlin has become, nor one in which the vile in thought and deed flourishes more abundantly. To some extent Berlin is also representative of the best in Germany, though less so than some other capitals—London and Paris, for example—in their respective countries, it absorbs less of the intellectual life of the nation than they do, and it has no traditions; neither is it the seat of such a strenuous commercial activity as great sea-ports, like New York and London. But it does represent the most complete application of science, order and method—pre-eminently German qualities—to public life. It is a marvel of civic administration, the most modern and the most perfectly organised city that there is. If one wanted to show some visitor from another sphere or some distinguished *revenant* from the past the most complete embodiment of modern ideas in the way of civilisation one must take him to Berlin. The sky-scraping buildings in American towns, though recently built, are not modern in spirit but just the reverse; they are survivals from a crude and lawless, if adventurous, age which is passing away. In more civilised communities the height of the buildings is regulated in the public interest, and people are beginning to find the neces-

sity of regulation in America. In Berlin it has reached its fullest expression. The limit is the width of the street, with a *maximum* of 72 feet, and since space is enormously valuable all the buildings rise to the limit, which gives about six stories. Then the width of the streets is similarly regulated, and since the whole town is new, with some small and disappearing exceptions, it is all the same. You may go in any direction for miles, right to the very edge of the city where the building terminates abruptly in a field, and it is all the same—the same broad, clean, well-paved streets, the same tall and massive houses, the same fine shops, the same electric light, the same electric trams. It is not pretty, or picturesque, or charming, or interesting—far from it; there is too much uniformity for that, and one would almost welcome a few judiciously distributed slums as a relief. But it is pre-eminently modern, and civilised, and German. At the same time this orderly exterior conceals a multitude of evils, of which overcrowding is one, for the housing question, acute in all German towns, is perhaps most acute in Berlin, where all the world save ambassadors and such great folk, live more or less huddled together in flats and tenements, or barracks, as the Germans correctly term them.

In these features Berlin gives us the ultimate expression of urban life in Germany. Orderliness is its chief quality, overcrowding its greatest defect; and all the towns which will be passed in review, though widely differing in many respects, possess these two features in a greater or less degree. Of them all, Düsseldorf, with which I begin, is the most Berlinised, because an exceptionally large part of it is quite modern. And yet the differences are great. There is nothing pretentious or imposing about Düsseldorf; it does not swagger and strut and bustle; its aspect is tran-

quil and pleasant, its buildings rather low than high, its streets quiet though full of life. Flat life prevails, but there are many private houses. No town suffers less from monotony of style, and if it has no buildings of the highest architectural merit or interest neither has it any of such supreme ugliness as the Reichstag and the new Dom in Berlin. But before going into further details I must say something about its situation and the industrial Rhine Province of which it is the centre,

The Rhine Province.

The Rhineland is the most westerly province of Prussia. It marches with the frontiers of Luxemburg, Belgium and the Netherlands from Treves in the south to Cleve in the north, and it is divided into five district Governments: (1) Treves, (2) Coblenz, (3) Aachen, (4) Cologne, and (5) Düsseldorf. That is not the official order, but the geographical, beginning at the southern extremity and proceeding down the river, as may be seen by a glance at the map. The total population of the province is 5,760,000 (1900). Cologne is the commercial capital of the whole, but the two distinctively industrial districts are Aachen and Düsseldorf, of which the latter is by far the more important. It includes the lowest section of the Rhine lying within the German frontiers, and contains a whole plexus of manufacturing towns, which for the most part have a special character. The town of Düsseldorf lies in the centre of the plexus with Crefeld, Neuss, Rheydt and München-Gladbach to the west and on the left bank of the river; Elberfeld, Barmen, Solingen and Remscheid to the east; Duisburg, Ruhrort, Mühlheim, Oberhausen and Essen to the north. These towns and a number of other smaller places scattered among them are the homes of flourishing manufactures in

great variety. Iron and steel works of different kinds are carried on principally in Düsseldorf, Essen, Duisburg, Oberhausen and Ruhrort; Crefeld is the chief silk town; München-Gladbach the headquarters of cotton; Elberfeld and Barmen manufacture chemicals and dyes, mixed textiles, buttons, braid, and many other things; Solingen and Remscheid make cutlery, swords, saws and files. The concentration of so many industries in one district is due to different causes; but, as I have already pointed out, the situation of old-established seats of industry, such as Elberfeld and Solingen, is most often determined by the presence of water, either for driving power or for textile purposes; that of more modern ones by the proximity of mining regions or of transport facilities by rail or water. Thus the modern industrial evolution of the Rhineland, particularly in iron and steel manufactures, which have attained such a remarkable development, is probably due in the first instance to the coal mines of the province and of Westphalia, which adjoins it on the eastern side, and in the second to the great water-way of the Rhine and an excellent system of railroads. In addition to these factors the production of steel has been greatly promoted by the invention of the "basic" processes, which facilitate the cheap conversion of the German phosphoretic ores. The extensive Rhine-Westphalian coal basin stretches eastward from the river, where the Ruhr joins it below Düsseldorf, for some thirty miles into Westphalia. Essen and its neighbours in the Ruhr valley stand upon it, but the bulk of the mining district lies over the border in Westphalia. It is a hilly region, almost given up to coal and iron. One group of smoky furnaces and tall chimneys follows another—Bochum, Hagen, Herdecke, Hörde, Dortmund, and others—interspersed with coal pits and tidy mining villages. Yet it

cannot be called a "black country," and in no wise resembles the desolation of South Staffordshire, for amid all the pits and furnaces the cheerful Westphalian farms, surrounded by trees and well-cultivated fields, smile prosperously from the hillside. This brief outline will give some idea of the situation of Düsseldorf and the character of its surroundings. Most of the places mentioned are within an hour's ride or so; the most distant—Dortmund and, in the opposite direction, Aachen—can be easily visited in a day.

Düsseldorf.

It is impossible to think of Düsseldorf without pleasure. We have no such industrial town in Great Britain, and still less have they anything of the sort in the United States, unless the few small factories which have sprung up in Washington entitle that charming little capital to be called an industrial town—a proposition that I cannot admit. Indeed I should say roundly that Düsseldorf cannot be matched outside of Germany if it were not for a few places, such as Zürich and Geneva, which possess extraordinary natural advantages. Inside Germany it may be placed alongside of Hamburg, Dresden and Stuttgart; but then the two latter are the capitals of kingdoms as well as manufacturing centres, while Hamburg—certainly the handsomest of all purely commercial towns—is a free city and a mighty port with more than 700,000 inhabitants. Düsseldorf, with its modest population of 214,000 (1900), really stands alone for utility and charm combined. It is not, however, a purely manufacturing town like Elberfield or Essen, which are the proper types for comparison with Yorkshire and Lancashire; it was once the capital of a principality, it still contains a royal residence and is the seat of a provincial Legislature; it has long been a centre of art and a favourite residential

town. Much of its charm is derived from a courtly past, but much also it owes to an industrial present, which has been grafted on to the ancient character, as in the case of Dresden and Nüremberg. To the one it owes its broad avenues, leafy gardens, ornamental waters, fine churches, art buildings and general air of a little capital; to the other its well-built, well-kept business streets and excellent shops, its cafés, theatres, electric trams and handsome new railway station. All these are redolent of prosperity and a well-ordered civic life, and characteristic of modern urban Germany, of which Berlin is the archetype.

The town itself lies on the right bank of the Rhine, upon level ground with a backing of low, wooded hills, which provide a popular resort and playground in summer. The river is here a magnificent stream, clear, swift-running, over 300 yards wide and forty feet deep; but strangely enough, it is not a prominent feature in Düsseldorf life. There are some good quays, opened in 1896, but they are not on a large scale, and I never went down to the water without wondering at the meagreness of the traffic. That may, however, have been peculiar to the winter season. As for the inhabitants, no one goes near the river, though there is a fine promenade along the embankment. This has been recently constructed; only two or three years ago, I am told, the river-side was a swamp, which perhaps explains why it still finds no favour, for these matters are governed by custom, which changes slowly. Whatever be the reason, Düsseldorf literally and ostentatiously turns its back upon the noble water-way that should be its pride. The oldest part of the town lies nearest the river, but only back windows or none at all look in that direction. In this quarter the streets are narrow and not guiltless of slums, but they are relieved

by the old market-place and a good many public buildings and offices, including those of the Prussian District Government and the Rathhaus. Neither is worthy of the town. The Düsseldorf authorities have not yet built themselves a lordly palace, like the town hall at Elberfeld, but have, much to their credit, spent the money on other public improvements, and have contented themselves with somewhat makeshift quarters which have neither the picturesqueness of the old nor the convenience of the new. The Kunst-Akademie, however, in the same part of the town, is a stately palace of art.

Next to this old quarter, with its narrow irregular streets and poor population, comes a very different section, consisting of broad, straight boulevards terminating in the charming little park called the Jägerhof. This is the bit of Düsseldorf which never fails to strike every stranger, and it is indeed unique. I remember once reading a dissertation by some gentleman from Berlin on the width of streets, in which he proved to his own satisfaction that Unter den Linden is the widest street in the world. But he left out the Avenida at Lisbon, which is certainly both wider and longer and far prettier than the pride of Berlin, and I think he must have overlooked the König's Allee at Düsseldorf, also. A stretch of ornamental water runs down the middle, and if one regards both sides as forming one whole, this remarkable street consists of two roadways and three foot pavements, all of ample width, a riding track, a double avenue of fine trees, and a piece of water twenty yards wide, spanned by numerous ornamental bridges. It is less pretentious than Unter den Linden, but incomparably more charming. Beyond this section and still further from the river lies the chief mass of the town, which is of a

more ordinary character, but very superior for a place of its size. It has spread rapidly in all directions in recent years, and now reaches to the outlying suburbs. Here in the outermost ring are the works and factories, and it is in a great measure their exceptionally retired position which makes Düsseldorf so very unlike most other manufacturing towns. Although they are chiefly iron and steel works equipped with foundries, the place seems guiltless of smoke, which is more than can be said even of Dresden, where the old Frauenkirche is soot-begrimed as black as St. Paul's. Among the more notable establishments are those of the Düsseldorf-Ratinger Tube Boiler Works, where the Dürr boilers are made; of Ernst Schiess, whose heavy machine tools are famous all over the world; and Messrs. Haniel and Lueg, who employ about 2,000 men and make all kinds of engines and machinery. These firms, I regret to say, send a great deal more of their manufactures to England, and often to the very towns where the same things are made, than is at all flattering to us. I have seen heavy machine tools going to Glasgow and Barrow, hydraulic presses and steel ingots to Sheffield, crank-shafts for electrical machinery to Manchester, shaft linings and a shaft borer to Kent, pumps to Middlesborough, forgings for machinery to the Tyne, and many other things. And do not let any one suppose that these things are "cheap and nasty". That phrase is absolutely out of date in regard to German products. The work is first-rate, as every English manufacturer knows who visited the brilliantly successful Düsseldorf Exhibition in 1902. The verdict of one highly competent authority, who has visited every industrial exhibition for the last fifteen years, and knows the United States as well as England and other parts of Europe, will suffice. "It was," he said, "the

finest show of machinery and tools ever seen." Nor is the export trade all "dumping" of surplus products. I found Haniel and Lueg executing more orders for England than for Germany, although they only entered the English market three or four years ago. The day before I visited the works they had received £9,000 worth of orders from England in one morning, and I have since heard that three-fourths of their output is for English customers. Besides the firms mentioned, there are many other well-appointed steel and engineering establishments, some large glass works, and a number of miscellaneous factories. Some are of quite recent foundation, and all have undergone rapid development within the last few years. From the notes published by Dr. Johannes Feig, of the city statistical office, I learn that the number of wage-earners in Düsseldorf rose from 18,761 in 1875 to 53,580 in 1895; that is to say, it was nearly tripled in twenty years, and the increase has since been equally or more rapid. At the same time the number of establishments in proportion to the persons employed has largely diminished. In other words, Düsseldorf has become a factory town, and the size of the factories is increasing.

The work-people live for the most part at no great distance from their work in the outer ring of the town or the suburbs. The rapid increase in their numbers has made housing a very difficult matter. Great efforts have been made to overcome it by building societies, the municipality and employers, but only with limited success. The whole subject will be treated separately in its proper place and can therefore be dismissed here with a brief reference. The working classes are housed in Düsseldorf, as in most German towns, almost entirely in flats. The cottage system is nearly as rare as the tenement system in English provin-

cial towns; but in Düsseldorf the tenements are of moderate size, not more than four stories high, and in the best of them the rooms are convenient and of fair size. The rents, however, are very high. Even in those erected by the municipality the average weekly rent is nearly half-a-crown per room. The only provincial town in England in which I have found rents equally high is Newcastle. It follows that a great many families are compelled to live in two rooms; and so great is the demand that even those in receipt of good wages are often unable to find lodgings if they have many children. Situated as it is, Düsseldorf is necessarily the centre of a great railway traffic. It lies on the main line connecting Cologne with Essen, and so with Hamburg, Berlin and North Germany at large; also on the main line from Cologne to Flushing, and so to London, distant only thirteen hours. In addition it is the terminus for numerous branch lines to neighbouring places on both sides of the Rhine; and so rapidly has the traffic developed that the very handsome central station, only opened about twelve years ago, is already inadequate. There are three subsidiary stations in the town. A network of electric tram lines further connects it with the neighbouring towns. Some of them belong to private companies, but the excellent system in the city itself is worked by the municipality. Düsseldorf has no timidity about municipal enterprise. Among the concerns carried on are water supply, gas, electric light, electric trams, parks, markets, quays, slaughter house, savings banks, mortgage business, pawn shop, libraries, baths, theatre, concert hall, orchestra, museums, picture gallery, police, fire brigade, workhouse, outdoor relief, night refuge, workmen's dwellings, sick insurance, numerous endowed charities, hospitals (general and lying-in), cemeteries, elementary, secondary and art schools. In addition to these

the town contributes to the support of an observatory and a labour intelligence office for the unemployed, sends invalid children to "holiday colonies," provides for a certain number of orphans, and occasionally gives free breakfasts to poor school children in winter. And yet Düsseldorf is by no means a "Socialist" town in the German sense, which goes to show what very different meanings are attached to that word. Its sanitary condition is not up to the highest standard, since the cesspool system still prevails, although the town is sewered. Nevertheless the public health is good and the death-rate low. The place is very clean and free from smells; I have only seen house drains discharging in the open on the extreme outskirts; slummy streets are few and need some finding. In these respects Düsseldorf is markedly superior to most industrial towns.

Of the population, about three-fourths are Roman Catholic and one-fourth Protestant, with some 2,000 Jews. With regard to education, which will be more fully dealt with hereafter, only a few points need be noted. It must be remembered that denominational religious teaching is carefully secured by law in Germany, and wherever possible separate schools for the two confessions are provided. Consequently, of the forty-two public elementary schools in Düsseldorf, twenty-nine are Roman Catholic, eleven Evangelical, and only two (suburban) are mixed. Compulsory evening continuation schools for boys of fourteen to sixteen years of age have recently been established. There were in 1902 forty classes carried on in seven schools. The town possesses no "technical" school. The engineering and mining schools for the district are situated at Duisburg, Elberfeld and Hagen, the textile schools at Crefeld, München-Gladbach and Barmen. There is, however, a municipal art-trade school at Düsseldorf with classes for drawing, painting, decorating,

modelling, carving, engraving, cabinet-making, glass-painting, lithography, and other crafts. The number of students in the winter session of 1901-02 was 285.

The growth of the town since the formation of the German Empire is shown by the following census figures:—1871, 69,265; 1880, 95,458; 1890, 144,642; 1900, 213,711; 1902 (estimated), 225,984. It is the twelfth city in the Empire in point of population.

Vital Statistics of Düsseldorf, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of births.	Deaths under one year per 1,000 born.
218,112	38·0	18·7	19·3	206

Of the births 6·9 per cent. were illegitimate.

Miscellaneous Statistics.

Police Force.	Public-houses.	Churches.
286	542	41

Theatres.	Newspapers.	Free Libraries.
3	29	3

Essen.

Essen and Krupp. Two great names, famous all the world over, and deserving of fame. As the big expresses roll into the station, which is the junction where the Berlin through trains divide for Flushing and Cologne, the name catches the eye, and many a traveller, hardly believing that this is the place of which he has heard so much, looks out of the window to get a glimpse of the great works; but few alight unless they have business to transact. In spite of its fame and its situation in one of the main highways of Europe, Essen is little known. "There is nothing to see, except the works." Well, perhaps not; and the works are not open to everybody. Yet, as I have suggested before, there is an interest in a town of this kind, with its strenuous, ordered, industrial life. It is real and human and healthy

and the very heart of our age. For some minds it has more attraction than the catalogued joys of the Baedeker round, and is more worth study than the sores of a fashionable city slum. Perhaps the time will come when travellers in search of distraction will turn their attention to such places, and then the world of means and leisure will know how the other half lives a great deal better than it is ever likely to learn from selected exhibitions of morbid social excrescences displayed on a screen by professional reformers or realistic novelists.

Essen does not represent the most common type of industrial community; it is too much of a one-man town and bears too many marks of the paternal employer's hand. But as an industrial achievement it is all the more remarkable. In 1811, when the first smelting furnace for casting steel was set up by Peter Friedrich Krupp, the population of Essen was under 4,000. In 1901 it was 183,500, out of which the Krupp contingent numbered about 84,000. At the same date there were more workmen's dwellings built by the firm than there had been inhabitants when it was founded. Now this and a great deal more is essentially the work of one man, and it is unparalleled in the history of industry. It must not be supposed, however, that the Krupp family created Essen out of the wilderness, as some places have been created by industrial enterprise, nor did they—to put the matter in another familiar way—turn a sweet rural scene into a wilderness of bricks and chimneys. The place is ancient, and has a history.

In the Middle Ages it was a walled city; the shape of the central quarter, the narrow and winding streets, and the names of the four gates survive as reminders of the past, but no other vestiges remain. It was for many centuries the seat of a princely religious foundation, dating from the ninth century. The town no doubt grew up as a

dependency around the cloister, which had Royal and Imperial connections; and both were ruled by a long series of abbesses of exalted rank, whose office from an early period carried with it the secular power and the title of Fürstin, or reigning Princess. The last Princess Abbess of Essen died in 1826, but she had been turned out five-and-twenty years before, on the conclusion of the peace of Lunéville, by which a number of church manors fell to Prussia. There is evidence that at some time during this early period of the town's history the inhabitants carried on a considerable textile industry. The names Flax Market, Weaver Place and Weaver Street, which survive, attest its existence. For centuries also Essen was famous for the manufacture of firearms. The command of running water and of coal, which is mentioned in connection with Essen as early as 1317, accounts for the development of these industries. They appear, however, to have declined gradually during the eighteenth century, when the town fell into a decayed condition. Modern Essen may be said to date from the evacuation of the French in 1813, which almost coincides with the original foundation of the Krupp works and marks the beginning of a new era. At that time the city walls were still standing, and a truly dismal little place they enclosed. To quote Justus Gruner :—

"All the decencies of life must here be renounced. Dirtier inns and ruder hosts are not to be met with in all Germany. Crooked, ill-paved lanes, old-fashioned, dilapidated houses, filth, crowding and darkness attest the antiquity of the place. On account of the entire absence of street lighting it is dangerous to take a walk in the evening, because one cannot help running up against great stakes, which commonly stand right in the middle and at the sides of the roadway. There is no police of any kind."

From this unpromising germ modern Essen has been gradually evolved, and at first the process was slow. It was not until 1830 that the middens and pig-styes which adorned the streets were cleared away.

Here is an object lesson worth pondering on for a moment, especially by those who declaim against the "factory system," against capital, individual enterprise and ownership. These things, they tell us, are hostile to "progress". Yet it cannot be denied that a good many signs of what is called progress in their own vocabulary have accompanied the evolution of Essen from the squalid slum it was in the lamented ante-factory age, when the workman owned his own tools, to the iron city of to-day, with its good workmen's houses, its public schools, parks, libraries, baths, hospitals, co-operative stores, recreations, and what not. Nor can it be denied that the Krupp factory has had a large share in the evolution. Still less can it be denied that this factory with all its works is an example of individual enterprise and ownership. The story bears repeating.

Peter Friedrich Krupp must have been a sanguine and energetic young man. He was born in 1787 and went as a youth into some ironworks at Sterkrade which came into the possession of his grandmother in 1800. These works had been started in 1780 and were among the earliest in the district; they still give their name to the large iron and steel business known as the Gutehoffnungshütte of Oberhausen. Here young Krupp worked at the invention of a process for casting steel and committed the reprehensible imprudence of marrying at twenty-one. One hears a good deal in these days about prudence, but in those a young man with some stuff in him followed the dictates of nature and took his future in his hand. Friedrich did so

and carried off his bride to Essen, where some ironworks that had been built for the abbess in 1790 were at this time acquired by the firm, which also became the owners of the Sterkrade works. This connection may have been the reason of Krupp's settling in Essen, but at any rate he soon set up for himself, and at the age of twenty-three he purchased a small forge worked by water power, where he devoted his time to secret experiments in producing steel in small crucibles. To this day the casting of crucible steel is the great speciality of the Essen works. A son, Alfred, was born to the young couple in 1812, when Friedrich Krupp was twenty-five. Want of means compelled him to enter into partnership at this time, and in 1815 the firm announced that they were prepared to accept orders for cast steel; but as no orders came the partnership was dissolved, and he was left to struggle on alone. This he did for some years, but with difficulty, until in 1826 he fell ill and died, leaving a widow and four children. Alfred, the eldest son, was then fourteen, and on his shoulders fell the burden of carrying on the business. His father had entrusted the secret to him and taught him the trade—another reprehensible proceeding according to modern views, which regard it as a crime for a child to enter a workshop or learn anything but school lessons before the age of fourteen. Alfred left school at once and took his place in the shop, where he worked at the furnace and the forge harder than his own handful of journeymen, and for years made no more than sufficed to pay their modest wages. "For my own toil and pains at such an early age," he said afterwards, "I had no reward but the consciousness of doing my duty." Few schoolboys have entered on the struggle for life with such a laborious inheritance and fewer have emerged so victorious after so long a probation. For twenty-five years the fate

of the concern hung in the balance and success became assured only after the London Exhibition of 1851. Four years previously the first gun, a three-pounder, of cast steel had been finished. Thenceforward the story is one of rapid and almost continual progress. In 1853 the manufacture of weldless steel tires was begun ; ten years later the first workmen's colony was built, and not long after Mr. Krupp found himself in a position to obtain command of raw materials—and so place the business in a self-sufficing and impregnable position—by the purchase of iron mines and blast furnaces, presently followed by coal mines. He died in 1887, having been for sixty years the head and for forty years the sole proprietor of the works, which then passed to his only son, the late Mr. Friedrich Alfred Krupp. They have been greatly extended since by the addition of other works and mines, and, in 1902, the Germania Shipbuilding Yard at Kiel, but are still, with all their branches and appendages, the sole property of the family. They are managed by a board of directors. On 1st April, 1902, the total number of persons employed at the various works was 43,083, representing with their families a population of about 150,000. The numbers were thus distributed :—

Steel works at Essen	24,536
Gruson works at Buckau	2,773
Shipbuilding yard at Kiel	3,987
Coal mines	6,159
Blast furnaces, proving ground, etc. . .	5,628
Total	43,083

I do not think any apology is needed for spending a little time on this well-known story. In some details it is unique, but in broad outlines it is typical. The old-fashioned little house of five rooms, in which Alfred Krupp's parents lived and worked and brought up their children, hard by the original forge, still stands at the

entrance to the works, and a tablet on the door refers, modestly enough, to the privations, efforts and anxieties which attended the founding of the business and overshadowed its career for many years. The contrast between the small, struggling beginning and the immense eventual achievement stands embodied before one's eyes with a dramatic significance which cannot fail to impress; but if one inquires the origin of other manufacturing concerns, one finds that, with rare exceptions—and those of recent date—they were started in much the same manner, went through similar early struggles, and survived by virtue of the same qualities. The "factory system," I repeat, is not the creation of capital, but of the superior intelligence, industry and endurance of individual workmen, and it has been a great school for the exercise and development of those qualities. The denunciation of the "system" and all similar cries are at bottom demands that the naturally superior shall not be allowed to exercise the qualities implanted in him by nature, but shall be artificially reduced to the level of the inferior. That is, no doubt, the direction in which social change is moving. We level up, and, at the same time, we level down; but there is something to be said for such as the Krupps.

Not all successful manufacturers, however, have used their success in such a responsible fashion as Alfred Krupp and his successor. There are other model settlements in Germany and elsewhere. England invented them and can show as good specimens to-day as any other country. But there is none on so large a scale, or, perhaps, so complete as Krupp's. It was in many respects a pioneer, and has long served as a model. Consequently, it is the object of bitter resentment on the part of those theorists who maintain the right of the workman to the whole produce of

labour. They denounce all such benevolent works as a fraudulent imposition on the recipient. Their theory is out of date and their personal attacks are base, but in part they are right. The reign of the benevolent employer is over. He gets no thanks, and the tendency is all in the direction of securing such conditions of employment as will enable the employed to provide their own benevolent institutions. This will not, of course, satisfy the extremists, who want to have no employers or employed, but to merge both into the community. In fact, it is a blow to them and another nail in the coffin of orthodox social democracy, for it will tend to make the employed more content. More philosophical observers will regard it with equanimity as the next turn in the ever-moving social current, whose ceaseless change represents the fresh readjustment of men to ever-changing conditions and invariably confounds the theorists by taking an unexpected bend. At the same time they will pay a tribute of appreciation to those who have done good work in their day. Among them Alfred Krupp stands out as a man of mark. Only blind hatred can refuse to see in the institutions started by him, and continued by his son, for the welfare of their men, a high sense of responsibility and a genuine fellow-feeling. Their value may be a matter of opinion; it depends on the object. But if material well-being be the measure of success—and in these days none other is recognised—the proofs of it are abundant.

The statues and portraits of Alfred Krupp, which commemorate him at Essen, give a very clear idea of what manner of man he was. Of the same generation as Kaiser Wilhelm I. and Von Moltke, he was of the same mould—tall, upright and spare; an alert, strenuous man, with the head of an inventor, a penetrating yet kindly eye and an

air of command; a thinker, yet living amid realities and a master of them; an unmistakable leader of men. Add Bismarck and you get a stately quartet indeed. It may be mere accident, but I look in vain for men of this physical type in Germany to-day. They seem to belong to another and more heroic age.

The English town which most naturally suggests itself for comparison with Essen is Sheffield, and there are many points of resemblance between them. Both lie on the same hilly sort of ground that goes with the presence of coal; both have narrow, old-fashioned, irregular streets; both have charming country on their outskirts, though in this the advantage lies with Sheffield; and both manufacture the same things on the same scale. On the other hand, Sheffield is more than twice as big, it is a much older manufacturing place and has a greater variety of manufactures. The ancient cutlery industry, file-cutting and electro-plating give it a special character which is lacking to Essen. Take them as they stand, however, for what the comparison may be worth, and it must be admitted that the German has rather the best of it. The site of the Krupp works on the lower side of Essen, in and yet out of the town, is curiously like that of the great Sheffield works—Cammell's, Brown's, Firth's and Vickers Maxim's—which lie all together in a similar position and probably occupy even more ground between them. They certainly make more smoke, or it hangs more persistently about. I have already said that Sheffield is the grimiest of all our manufacturing towns, with the possible exception of Gateshead, and a large part of it is generally wrapt in a pall which neither London nor Manchester can equal. America alone, with her genius for surpassing everything, easily beats it. Compared with the inferno of Pittsburg and the lesser, but still more grimy

and dismal, hells up the Monongahela Valley—Homstead, Braddock, and the rest—Sheffield is clean and Essen a pleasure resort, in spite of the fifty or sixty tall Krupp chimneys that flank it on one side and various other factories with sundry coal pits on the other.

From the high ground to the south one gets a good birds-eye view of the whole, and it is worth a look. The largest private workshop in the world lies below on the left, a self-contained unit in a ring fence, spread out over a great area on the flat ground; for Krupps have not been cramped for space and there is no huddling. The smoke drifts away northward for miles, but leaves everything clear behind it. To the right lies the town with its spires and public buildings and a spacious park in the foreground. Around one are the Krupp colonies. These begin close to the works on the side away from the town and spread up the hills to the south and south-west, lying dotted about over a wide area and forming a number of separate villages. As an essential part of Essen they deserve some notice. There are eight of them, built at different times and in different styles. The oldest dates from 1863 and lies just outside the factory gates. It consists of a few rows of ordinary houses arranged in streets and occupied as flats of two and three rooms each. The next were built in order to accommodate the great increase in the number of hands caused by the rapid expansion of the business after the Franco-German War. Apart from some temporary buildings run up in a hurry and since demolished, they consist of an extension of the first colony and three new ones, laid out as separate and self-contained villages with a more or less rural character. The houses are grouped about central open spaces; most of them have gardens and some have cowstalls. Schools, stores, market-places, recreation grounds, and other public institutions,

including the indispensable *bier-halle*, make the village complete. But there are no fancy appointments about these colonies. Everything is quite plain and practical. The houses are not single cottages; they contain from four to twelve families, each occupying from two to four rooms. The object was to provide cheap and decent housing, which was not otherwise obtainable, and it is kept strictly in view. The three remaining colonies were built many years later by Friedrich Alfred Krupp. They lie further out in the country and are of a more ornamental character. In one—the most recent of all—the flat system is retained, but is carried out in a more artistic fashion. The other two consist of cottages in the English style and are quite charming, particularly the Altenhof colony for disabled, aged and pensioned workmen. It lies high up on the hill at some distance from Essen, and includes two churches—Roman Catholic and Protestant—and a delightfully-situated convalescent home. Here the old pensioners pass their remaining years in the greatest comfort, pottering in and out of each other's houses and discussing the newspaper or gossiping. The total number of dwellings erected at the end of 1901 was 4,274, thus classified: Two rooms, 1,690; three rooms, 1,869; four rooms, 448; five rooms, 150; six rooms, 63; seven or more, 54. They housed 26,678 persons. Rents range from 7d. to 1s. 6½d. a week per room. Thus the rent for one of the best four-roomed dwellings is about 6s. 2d. a week. The capital expenditure on workmen's houses by the firm amounted at the same date to £814,000. Other subsidiary institutions include a general hospital, two infectious hospitals, medicinal baths, circulating library, dining-rooms, club-houses, schools, stores, savings banks, life insurance and numerous sick and pension funds. The effect of the Krupp colonies in meeting the housing difficulty

is seen in the fact that the average weekly rent of a single room in Essen is only 1s. 8d. (1901), against 2s. to 2s. 6d. in neighbouring towns of a similar character.

With regard to Essen proper not much more need be said from the industrial point of view. There is nothing very remarkable about the town. The main streets in the centre have been modernised, but they remain narrow and rather mean. Some of the side streets retain the old character and an element of picturesqueness. The churches, schools and numerous public buildings substantially modify the congestion, which must once have been great. The newer streets in the outlying parts of the town are well laid out and adequate. As is usual in German towns, the public buildings are handsome, solid and built to last, and they are rather more numerous than usual in Essen, which is a somewhat important centre. It is the seat of the provincial Courts of Justice and the district headquarters of the Prussian State Railways. Both are worthily housed. The town hall is new and sufficiently important.

Apart from Krupp's the industries are not extensive. There is one considerable ironworks which makes a speciality of boilers, a chemical factory, breweries and several coal pits. The town lies over the coal-bed and the mines run underneath it. The great Rhine-Westphalian Coal Syndicate—probably the most important industrial combination in Germany—has its headquarters at Essen. The products of the Krupp works are very varied. Their fame is chiefly associated with war material but they minister no less to innumerable peaceful purposes. All kinds of finished and half-finished material for railways, ships, engines, tools, mills and other industrial appliances are turned out in large and small quantities. The war department includes guns of all sorts, of which 39,876 had been delivered up to the

end of 1901, projectiles, fuses and ammunition, rifle barrels and armour. The manufacture of offensive and defensive material is a lucrative game of see-saw in which the Governments of the world are pawns in the manufacturers' hands. It is like the burglar and the safe. The scientific possibilities are infinite, and the experts have only to turn their attention to each in turn and their customers must follow. A more powerful gun, a more vicious projectile or a new ammunition and the old defences are obsolete. The Governments hasten to provide themselves with the latest instruments of destruction. Then the metallurgical chemist brings a new hardening process or a new alloy on the scene and produces armour which defies the latest weapons; and again everybody must have it or questions are asked in Parliament. Thus it happens that the Essener Hof—that most exclusive of hotels which stands hard by the works and is reserved for distinguished customers—never lacks guests from all parts of the world. They are the emissaries of their Governments, watching the execution of orders. There is not much fear that any of the great Powers will outstrip the rest to an alarming extent. These matters are, of course, a profound trade secret; but somehow or other Essen knows pretty well what is going on at Elswick and Sheffield, which return the compliment, and all three have made up their minds about the merits and defects of the new French gun before it has been delivered. At present, I understand, armour plate is made in England and America on the Krupp process by arrangement with that firm.

This suggests a comparison as regards the workshops. Elswick is the single establishment which comes nearest to Essen in size and character, but the conditions are so different that comparison is hardly valid. The famous Armstrong works lie stretched out in a narrow belt along

the left bank of the Tyne and are rather cramped for room. In some departments the shops are built in several stories and cannot therefore be lighted from the roof; but the recently reconstructed foundry, measuring 770 feet by 75 feet, is a fine specimen of its class. The Krupp shops have been built at very different dates and vary accordingly, but as a whole they possess in a marked degree that order and cleanliness which is the most distinguishing feature of German factories. This extends to the foundries, where dirt, smoke and confusion usually hold sway. A speciality here is the casting of very large ingots of crucible steel; it is a remarkable sight and an object lesson in German methods. Ingots of eighty-five tons are cast, a feat which is, I believe, not attempted anywhere else. The steel is melted in small crucibles which are carried by hand, and therefore contain no more than two men can lift. Scores of such crucibles go to the making of an ingot of considerable size, and they occupy many furnaces, which are ranged on both sides of the foundry, with the ingot-mould in the middle. At the signal the furnaces are opened, the crucibles drawn out and seized by a small army of workmen, who run them down to the mould and pour them in. It is obvious that to do the thing on a large scale perfect method in preparation and order in execution are necessary. The manœuvre is carried out with military precision and promptness. In a moment the place is aglow with the white heat of the furnace, the figures run from all sides, and come staggering down in pairs with the pots full of liquid steel. It is a scene of intense activity, but without confusion. One after another the glowing pots are emptied; the molten metal runs like thick soup and plumps into the mould with a bright sputter. In a few minutes it is all over; the furnaces close again, the used crucibles are thrown aside, and already

the cast mass begins to congeal and change colour; white presently dulls to yellow, and the tint deepens as you watch. The steel so made is the purest known, close-grained, homogeneous and uniform throughout. The most recently built workshops at Krupp's are quite up to date in their construction—light, spacious and airy; but they are in no wise superior to the newer ones at Sheffield, which are also fully as well equipped with modern appliances.

I mentioned the churches and schools above. Nothing is more striking in this part of Germany than the number of fine churches built or restored in recent years. The total provision of places of worship is small compared with that in English and American towns, where innumerable sects have their own conventicles; but the concentration of religious influences into two camps—Catholic and Protestant—results in the erection of much finer buildings. They really are churches, not mere barns or concert-rooms, and embody some true sense of religious aspiration. Essen has at least five such modern churches—three Catholic and two Evangelical. The relative strength of the two main communions is, roughly: Catholic, 101,000; Evangelicals, 76,000; with about 1,800 Jews and a few Dissenters. The elementary schools are accordingly divided thus: Catholic, twenty-four; Evangelical, seventeen; one old Catholic and one Jewish. The other public schools are a continuation and a trade school with three sections for (1) building, (2) engineering, (3) decoration; *Gymnasium*, *Real-Gymnasium*, *Ober-Realschule*, and higher girls' school. The trade school answers to what is called in England a technical school. It has day classes for superior students, who pay 30s. the half-year, and must have previous practical knowledge, and evening and Sunday classes for artisans, who pay 16s. a year. The rapid development of the labour

market has caused a great influx of workmen from other parts of Germany and from elsewhere, but this is a common feature in the Rhineland manufacturing towns to-day. Like Düsseldorf, Essen returns a Central member to the Reichstag. In the general election of 1903 the final majority over the Social Democratic candidate was 6,384.

Municipal enterprise is less developed in Essen than in Düsseldorf. The electric trams belong to one company and the electric light and power are leased to another. The public water supply is very fair, but it entails such a heavy draught on the river Ruhr that large reservoirs made by damming flood waters among the hills are contemplated. This is a common source of water supply in the Berg country, and will be further mentioned in connection with Solingen. Essen is sewered and drained. The sewage is chemically treated, but there is the usual difficulty in getting rid of the solid residue.

Vital Statistics of Essen, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
187,385	46·1	20·7	25·4	165

The very high birth-rate, only equalled by Duisburg, and a low suicide rate (·08 per 1,000, the lowest in the large towns of Germany), indicate a high degree of prosperity. Of the births only 3 per cent. were illegitimate; this is also very low, and only equalled by four towns.

Miscellaneous Statistics.

Police Force.	Public-houses.	Churches.	Theatres.	News-papers.	Free Library.
225	416	13	3	22	1 (Krupp's)

Elberfeld and Barmen.

Here we have the true type of industrial community. These sister towns—administratively separate, but actually one, like Manchester and Salford or Hamburg and Altona

—are purely manufacturing places; they have been so for centuries, and as towns have never been anything else. They may fairly be compared with Bolton and Blackburn as to size and character, though there are important differences. Their manufactures are far more varied; they are not cotton centres, and they contain more of the trading element than the Lancashire towns, where the warehouse business, as I have shown in the last chapter, is relegated to Manchester. In these respects they more nearly resemble Bradford and Halifax.

Elberfeld and Barmen are situated on the edge of the charming and romantic Berg country, which lies a few miles east of Düsseldorf and north-east of Cologne. They form a continuous narrow winding belt of houses and factories about eight miles long, hemmed into the small and rather deep valley of the river Wupper, a hill tributary of the Rhine. They are famous for their textile and chemical manufactures, their unique hanging railway, and for the poor-law system inaugurated at Elberfeld and copied all over Germany. They are, or should be, infamous for their treatment of the beautiful little river to which they owe the origin and development of their industrial prosperity. Centuries back this valley acquired a reputation for the bleaching of linen, and in 1527 the Herzog of Berg granted the inhabitants the monopoly of producing the yarn, to which they presently added the art of weaving. Their goods became known far and wide; they did a large export trade and waxed fat. In 1610 Elberfeld received a charter of incorporation, so that it has been a self-governing city for nearly 300 years. Barmen can hardly have been less prosperous, for at this time it possessed eighty-eight bleacheries; but it had to wait 200 years for the same privilege. Both underwent the usual chastening discipline

of war, fire and pestilence. Like all the other towns in this part of the world, they were from time to time occupied by various troops, and occasionally plundered, burnt down and devastated; but the sturdy race quickly recovered itself and drew profit from adversity, as all men of stamina do. When French troops were quartered on them they improved the occasion to establish business connections and extend their markets and their manufactures. Trade with France, promoted by Colbert, became important. Early in the eighteenth century the art of dyeing was introduced, and the use of wool, followed by silk and cotton, with lace and ribbon making, was added to the previous textile industries. Jacquard looms were introduced in 1821. Various allied manufactures, such as buttons and thimbles, began to be developed; and, in spite of two large speculative failures —the Rhine West Indian Company (1821) and the German American Mining Society (1824)—the numerous industries, except spinning, grew steadily during the nineteenth century. The Wupper towns took their full share in the national development following the war of 1870. At the time of the French evacuation, after the fall of Napoleon Bonaparte, they had a combined population of some 30,000; in 1900 it had grown to 300,000, of which Elberfeld accounted for 156,000 and Barmen for 144,000. By the extension of the factories along the river banks the two towns have grown into one, and as they stand they may be said to constitute the greatest centre for the production of drapery and haberdashery in the world. To that must be added a speciality which more than any other represents the triumph of Germany. I mean the manufacture of dyes and fine chemicals. Germany has made herself purveyor to the world of these products, and the Wupper Valley is one of the principal seats of the industry.

In its essential features this busy community more closely approximates to the English type of manufacturing town than any other in Germany. There is the same throb and pulse of life, the same impression of energy, the same absorption in realities and sane acceptance of a work-a-day world, coupled with a determination to get as much enjoyment as can be got out of it. And there are the same unattractive accompaniments, of which more presently. We can leave the unpleasant things to the last, and begin with the others.

The hanging railway is the most striking thing the two towns have to show. If sightseers visit them at all, it is generally to see this famous contrivance, which is the first of its kind to be adapted to passenger traffic. It runs from Vohwinkel, a suburb at the lower end of Elberfeld, up the valley nearly to the far end of Barmen, which lies higher up the river. In other words it traverses the entire length of Elberfeld-Barmen from end to end, and for nearly the whole distance it follows the river. It is, in fact, built over the river, and, but for that convenient artery, which provides just the required space all the way through the heart of the place, it could hardly have been built at all. That is clear from the course of the railway, which also traverses the valley, but has to keep to one side; and of the trams, which have to make numerous detours, and are consequently very slow. The river happens to be wide enough, but not too wide, for the purpose, and it is exactly in the right place, for the houses and factories—particularly the factories—line both banks from end to end. The railway is suspended in the following manner: About every hundred feet iron lattice work supports are planted on each bank, inclining towards each other

at an angle. They are joined at the top by a girder, forming an arch over the river. There is thus a series of arches about 100 feet apart. An iron framework, light but strong, runs from one to another and so forms a continuous line, running lengthways above the stream. This structure carries a rail on its outer edge at each side, and the cars are suspended from the rails, the "up" cars on one side and the "down" cars on the other. Each car hangs from the rail on four wheels, arranged in pairs, one pair at each end, and held above the roof by powerful arms attached to the body of the car. In appearance it is very much like those on the Great Wheel at Earl's Court. Thus suspended over the river and driven by electric motors placed between each pair of wheels, the cars run along the single rail at great speed, and with an extremely easy motion. At first some difficulty was experienced from a tendency to sway and rock, which even caused sea-sickness in very susceptible passengers, but that has now been overcome and reduced to an occasional and barely perceptible movement. There are stations at short intervals, and the speed and freedom from obstructions make the railway an extraordinarily convenient means of locomotion. In a few minutes it lands you in any part of the town you wish. I know the overhead railways of New York, Liverpool and Berlin, the London tubes, and the shallow underground railways of London (alas! too well), of Boston and Budapest; but in my opinion the hanging railway of Elberfeld-Barmen is more expeditious and agreeable than any of them. I doubt if it would be suitable to the narrow streets of inner London, though at Elberfeld the end section to Vohwinkel leaves the river and is carried over the main street, but the system deserves more attention that it appears to have re-

ceived in England from those who are interested in problems of locomotion. Germany is quite as good a school for these things as America. Mr. F. N. Gütersloh, a retired engineer who for many years held an important post under the Indian Government and now lives at Düsseldorf, considers the hanging railway admirably suited to a line from Calcutta to Simla. The first portion of the Elberfeld line was opened in March, 1901, the last at the end of June, 1903. The total length is eight and a quarter miles. The cars hold fifty passengers each, and they run at intervals of a few minutes, either singly or two or more together, according to the requirements of the traffic. The fares vary from ten pfennigs (a trifle over 1d.) to fifty pfennigs (6d.) according to class and distance. The line was built for the "Kontinentale Gesellschaft für Elektrische Unternehmungen Nürnberg," by the "Maschinenbau-Aktiengesellschaft Nürnberg". It is standing evidence of German enterprise in electrical engineering. I understand that similar lines are to be built in Berlin and Hamburg.

It is hardly necessary to say that Elberfeld and Barmen are determined rivals. To say anything in praise of one within the hearing of a citizen of the other is like speaking of Bolton to an Oldham man, or mentioning Bradford in the streets of Leeds. Your hearer promptly calls attention to the superior merits of his own place of residence. This rivalry is a healthy and stimulating influence; it keeps a vigorous public spirit going. There are many signs of it on the Wupper. The towns—or at least the central parts of them—are old and unsuited to the great traffic of to-day; they are crowded with factories; their situation is unusually cramped, making extension difficult; and the population has increased very rapidly in recent years, largely by

the influx of workmen from outside. In these circumstances great efforts are required merely to prevent extreme congestion and squalor, and they have been made. Any one familiar with such matters must readily recognise how much has been done both by public and private action, not only to mitigate actual evils, but to increase the dignity and amenity of life. The heart of Elberfeld, in particular, is a labyrinth of queer little crooked streets, in which the keenest sense of direction is apt to be at fault; but they have made room for a magnificent town hall, occupying a commanding and central position, and have driven a new street through the crowded buildings hard by. The Town Hall cost £185,000 and the new street £450,000. Similar improvements are being carried out elsewhere, particularly on the river bank, where they are very badly needed. In short, Elberfeld is on the road to be quite a fine town. It would be gross flattery to say that it is so already, in spite of the things mentioned and the open space in front of the chief railway station, which makes a favourable first impression, flanked as it is by the municipal theatre and baths on one side and the State railway offices on the other. Many things remain to be done before Elberfeld is entitled to a first-class certificate, and I shall take the liberty of mentioning some of them before I have finished. Barmen seems to be somewhat less ambitious, but it has some more open streets and a more pleasing air; it is more spread out, less shut in by the hills and, so far as buildings are concerned, it deserves special credit for the really dignified *Ruhmeshalle* or Hall of Fame, erected by the citizens to commemorate the Franco-German War. The hall houses, among other things, the town library, and is an agreeable change from the interminable Bismarck and other "denkmals," which are strewn about Germany like the statues of

her late gracious Majesty in our own happy land, and with about the same sense of art. The Barmen *Ruhmeshalle* redounds doubly to the fame of the town, for the architect was the Director of the Barmen Technical School for Architecture, and won the first prize in an open competition.

The educational facilities are exceptionally complete; for, in addition to the full complement of elementary and higher schools, there are "technical" schools for textiles, for architecture and for engineering, as well as art-trade and hand-worker schools. Of the technical schools, the most important is, naturally, that which provides instruction in the predominant local industries, which are various kinds of textiles. It is situated in Barmen. Though not so large as some of the newer ones and with a less ambitious equipment, the building is adequate, the teaching staff numbers seventeen, and the installation includes about 100 machines. The curriculum is particularly directed to the Wupper Valley specialities. Practical instruction is given in weaving dress and upholstery materials, braids and ribbons, in knitting, lace-making, art-sewing, designing, dyeing and finishing. There are day and night classes, the former for manufacturers, managers and heads of departments, the latter for foremen and forewomen and for ordinary hands, both male and female. The various grades of students are taught in separate departments. The full course varies from half a year for work-people to four years for designers, and the fees from 30s. for work-people to £10 for manufacturers, managers, buyers and salesmen, dyeing and finishing experts. That is for Germans. The fee for foreigners is £50. The same rule applies to all the Prussian schools of this class, which are under the control of the Ministry of Commerce. Elberfeld has quite recently started a school of commerce and compulsory continuation schools.

The housing of the working classes in this thronged and crowded valley is far from satisfactory, and less appears to have been done towards providing better accommodation than in several other industrial towns in the district, although Barmen was one of the first to start a building company for the purpose more than thirty years ago. Down to the end of 1901 the company, which is of the nature of a benefit society, had built 365 houses in ten different quarters of the town, housing some 2,500 persons, the majority of whom were factory workers and their families. Some of these houses have a very pleasant appearance; they are certainly better and cheaper than the ordinary dwellings obtainable, but even in them there is much overcrowding. An official report published in 1897 gave the proportion of tenants living more than two in a room as 16 per cent. In neither town has the municipality provided any housing, but Elberfeld keeps a house register for the benefit of the working-classes. The impression derived from observation is not favourable. Tenement buildings of many stories abound, and in the more congested districts rise up one behind the other on the hillside. Some interesting statistics, based on the census of 1900, have been prepared by Dr. Otto Landsberg, Director of the Statistical Office of Elberfeld. In the most congested part of the town 62·9 per cent. of the inhabited buildings contained over six households each; 68·4 per cent. contained upwards of twenty inhabitants; and 12·1 per cent. upwards of fifty inhabitants. The density of population here was 190 to the acre. I have no corresponding figures for Barmen, but the overcrowding there is less obvious, and the average number of persons to a dwelling-house is slightly lower. Manufacturers appear to have done less to provide housing for their people than in many other

places, but credit should be given where it is due. The great chemical company, "Farben Fabriken," have built fifty superior houses containing 200 families, and the well-known firm of D. Peters & Co. have a remarkably complete model settlement at Neviges, an outlying manufacturing village. The average weekly rent for an unfurnished room is 2s. 4d. in Barmen and much the same in Elberfeld.

In spite of the overcrowding, these towns are remarkably healthy. The death-rates in 1901 were: Elberfeld, 17·2, Barmen 16·5 per 1,000. Such rates are so remarkable for towns of this size and class that I am somewhat at a loss to account for them. One factor may be the presence of a large number of single immigrant working men in the prime of life; if crude rates were corrected by the age co-efficient, they would probably be higher. Another reason is a comparatively low infantile death-rate, which is surprising in a place where the birth-rate is high and many women are employed in factories. However, the valley is undoubtedly healthy, and probably the chief factor is the situation of the houses, which are built on natural and often steep slopes. Everything is carried off rapidly, and the ground does not become wet or saturated with filth.

Both towns have several good parks and playgrounds, thanks chiefly to their Verschönerungsvereine, or improvement societies, which appear to be very active and public-spirited bodies. They have preserved portions of the charming wooded scenery which once filled the valley and still lies on the outskirts beyond the range of bricks and mortar. No town of this kind has prettier surroundings. The place must once have been lovely.

The churches are less noteworthy than in many neighbouring places. I do not know if this is due to the preponderance of the Evangelical element, which includes about

four-fifths of the population. The disparity was formerly still greater, but in the last ten years there has been a more rapid relative increase of Catholics in Elberfeld, doubtless by immigration. The following details with regard to religious sects, from the census of 1900, may be of interest as showing the state of this element in a German Protestant town. They are classified thus: (1) Evangelical, 113,008; (2) Evangelical sects, 593; (3) Catholic, 40,122; (4) other Christians, 1,473; (5) Jews, 1,679; (6) others, 88. (1) The Evangelicals are further divided into thirteen sub-divisions, of which the important ones are: Evangelical-Lutherans (52,166), and Evangelical Reformed (43,357). There are 15,686 unspecified, and the remainder consist of insignificant groups, or solitary individuals, such as one "Zwinglian" and one "Waldenser". (2) The "Evangelical sects" are seven in number. They include 283 Baptists, twenty-one Anglicans, twenty-one Methodists, eleven Mennonites and one "Herrnhuter". (3) Of the Catholics, 40,000 belong to the Church of Rome, ten to the Greek Church and forty-two are "Altkatholisch". (4) The "other Christians" include two members of the Salvation Army, twenty-seven Adventists, thirty Darbysts, one representative of the *Versammlung Gottes*, forty-three Free Religionists, besides "Dissidents," "Christian Dissidents" and plain "Christians". (5) The last class includes one "Heathen," two "Freethinkers," twenty-two Atheists and forty "religionless". This curious collection goes to show that the spirit of the "Marrow Kirk" is not unknown in Protestant Germany. Of the thirty-six varieties and sub-varieties of conscience enumerated (of course by the people themselves), six are represented by solitary individuals. In spite of the Social Democratic doctrines, which have a strong hold here and are still hostile to Christianity, though a profession of in-

difference has been found politic, the people have the character of being very God-fearing and religious; and that is borne out by the exceptionally low number of illegitimate births. The proportions are (1901): Elberfeld, 5·8; Barmen, 3·0 per cent. of the total births; and Elberfeld, 2·1; Barmen, 1·0 per 1,000 of the population. In Chemnitz, which more nearly resembles Elberfeld-Barmen than any other industrial town in Germany, the respective rates are 12·1 and 4·8; but the difference is partly due to higher wages and superior prosperity in the Wupper Valley. The Elberfeld poor-law system will be more fully explained under the heading of "Pauperism," but it deserves mention here in connection with the town which invented it. The claim is, I believe, disputed by Hamburg or some other place, as such claims generally are; but Elberfeld certainly was the first to apply and develop the idea, and deservedly enjoys the credit of it. Broadly speaking, it is an elaborate system of outdoor relief, organised in great detail and carried out not by paid officers, but by private citizens who give their services gratuitously. Such services are compulsory in any place where the system has been adopted, but its adoption is voluntary. In other words, the citizens voluntarily assume a burden which entails upon any individual selected real and personal sacrifice of time and trouble of quite a different kind from that devolving on boards of guardians or other representative bodies. It is a striking example of that public spirit and sense of duty which are so marked a feature of German civic life.

Some idea of the number and variety of the industries carried on has already been given. I can hardly think of any town, except Philadelphia, where there is so much variety; and this is an important factor in the maintenance of steady employment. Towns which have all their

eggs in one basket, so to speak, like Crefeld, Bradford, Oldham, Fall River, and many others, are hit very hard when a depression occurs in their speciality; there is nothing else to fall back upon. But with plenty of variety this does not happen; as, when one branch is depressed, another is often unusually brisk, money is kept circulating, and persons thrown out of work in one direction have a chance of temporary employment in another. Almost the only large branch of manufacture which does not find a place is spinning, which is fortunate for Yorkshire and Lancashire. The Wupper is one of their best foreign markets. All kinds of dress materials—wool, silk, cotton and mixed; dress accessories, particularly braids, trimmings, ribbons, embroidery, laces and buttons; carpets, curtains, and other furniture stuffs; dyes and chemicals—these are the staples. But there are also rubber and leather goods, gold, silver, copper and aluminium wares, textile machinery, paper, soap, oilcloth, wall-papers, stained-glass, and many others. The factories, as a rule, are small and consequently very numerous. Many are also old. There are some fine new mills at the far end of Barmen, but modern buildings are the exception. The factories are placed all along the river on both banks, with their backs to it, and all their refuse runs into the stream. The view, once hidden, but now revealed by the hanging railway, which runs between them, is absolutely horrible. The mills are not so bad, but the dye and chemical works are most offensive. The development of these industries dates from 1785, when the secret of turkey red was acquired, the discovery of aniline colours gave it a great impetus, and the subsequent immense expansion of industrial chemistry in Germany has nowhere been more actively applied. In particular Elberfeld has the honour of housing

the renowned "Farben Fabriken" Company, at whose enormous works 160 expert chemists are said to be employed. Among other blessings showered upon the world by their labours, are constant additions to the interminable series of synthetic and other new drugs, including those anodynes and sedatives which are largely responsible for the increasing prevalence of "neurasthenia" and inebriety among women of the upper classes.

Now these works are doubtless good for trade, but they have their seamy side, and it does not need much looking for. The Wupper has already suffered some indignities before it enters Barmen, but so great is the volume of pure water brought down from the hills by the rapid little stream that it is still quite clear. The tint darkens steadily as it passes mill after mill, and by the time it reaches Elberfeld it is fairly black; but the filth continues to be poured in. Every factory adds its shameless contribution—red, blue, yellow, purple—varied by drains carrying the surface water from the town, mingled with the household slops that meander freely down the gutters in the side streets. The stream emerges opaque, slimy, black as ink, with a foul iridescent scum; and in that condition it wanders away down the lovely wooded valleys by Müngsten and Burg, which it pollutes with its disgusting presence. It is half solid with filth, and its banks are covered with a deposit of black and stinking slime. We cannot boast on the subject in England, but even the unfortunate river Aire, after running the gantlet of Shipley, Bradford, Leeds, and other towns, is nothing like the Wupper. It is the most damnably ill-used running water in the world. It should be a thing of beauty and delight; it is a black disgrace and a public nuisance. Presumably this iniquity is permitted to continue unchecked

because those who perpetrate it control the conduct of public affairs; but if the chemical works, instead of boasting of the number of chemists they employ and the millions of capital they have invested, would apply the knowledge of the one and some small portion of the other to disposing of their refuse and abating the nuisance, they might command more respect than it is possible to pay them at present.

There is some hope of it, perhaps; for, as I have said, the place is improving. Indeed, there are signs of it even in the river. Evidently innumerable drains used to empty into it which now do not. The sewage is, I believe, carried down below, which is better than running it through the town. Drainage and the disposal of sewage are still among the weak points of German towns, although great improvements have been effected in these respects. Household slops running in the gutters are a common sight. There is no serious harm in it, but it is extremely unsightly. The streets are a weak point in other respects; the paving is generally of the roughest, and that is markedly the case here. There is much room for improvement also in the way of smoke-prevention, which does not seem to be attempted. The heavy pall hangs in the valley, particularly at the lower end of Elberfeld, and spoils the remnants of what must have been a beautiful scene before the chimneys multiplied. It is inexcusable, because it is not caused by foundries or furnaces. There is probably no spot where the handiwork of nature has been so badly marred, for the Monongahela Valley could not have been beautiful even before Mr. Carnegie went there. As one enters the lower end of Elberfeld by the hanging railway and glides over the blackened river through the iron work cage made by its beams and girders, past the forest of chimneys and the discoloured, dilapidated factory walls with the tall gaunt tene-

ment houses looming through the smoke in the background and climbing up the hillside, the hideousness of it all is heightened by the gracious sweep of the hills, the glimpse of woods on their heights above the belt of bricks and smoke, and the rush and turn of the water below. Surely Elberfeld could do more to reconcile its industrial activity with the natural charm of its situation.

Vital Statistics of Elberfeld and Barmen, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
159,023	34·0	17·0	17·0	165
143,688	33·2	16·3	16·9	158

The proportion of illegitimate births was, as already mentioned, 5·8 per cent. in Elberfeld, and 3·0 per cent. in Barmen.

Miscellaneous Statistics.

Police.	Public houses.	Churches.	Theatres.	News-papers.	Free Libraries.
230	496	—	3	8	1
179	483	10	2	8	1

Crefeld.

The name is written with a K in official Government documents and by the local Chamber of Commerce, but with a C by the municipality and generally by the public;[1] so there is authority for both, and the stranger can take his choice. But, however the name is spelt, Crefeld is a very curious place. It is a purely manufacturing town, but totally unlike any other that I have seen in any country. In the first place there is no obvious reason why it should be the seat of manufactures at all. It is not near coal or running water or any such

[1] A German correspondent has written to me to say that it is just the other way about, but with the documents before me I stick to my statement. His correction, however, is additional evidence that the spelling is optional.

natural resource; nor is it on a great highway. It lies on the left side of the Rhine, but several miles from it, and about fifteen miles to the north-west of Düsseldorf, with which it is connected by a light electric railway running across a dreary and almost uninhabited plain. The site is perfectly flat. In the second place it is laid out in a very peculiar manner. The central part of the town is enclosed by four wide streets or boulevards, called the north, east, south and west "walls," which form a large rectangle; and the other streets are almost equally regular. The plan is on very modern lines, but the town is not. The building, again, is peculiar; the houses are neither the wooden-beamed, green-shuttered cottages of the smaller Rhineland towns and villages nor the many-storied blocks of modern urban Germany. They are small white houses of two or three stories. There is a foreign air—Dutch or Flemish—about it. But, however this may be, it is a highly attractive place, clean and tidy, with plenty of trees, gardens and open spaces. Its aspect is modest, quiet, and *freundlich*. Within the town the bustle of trade is conspicuously absent and nothing is to be seen of factory life. Yet Crefeld is as completely a mill town as Oldham itself, and the mills are hard by, ranged on the fringe of the streets—numerous, modern, red brick, business-like. They are chiefly devoted to the manufacture of silks and velvets, which form the great staple industry. Crefeld is the Lyons of Germany.

Little is known of the early history of Crefeld or of the origin of its rather singular name, which has taken many forms in the past, but it is a fairly ancient place. The earliest authentic mention occurs in 1166; and the dignity of a *Stadt* was conferred in 1373 by Kaiser Karl IV.

Crefeld must have been then a centre of some local importance; it had the right of holding the weekly and yearly markets which are still a great feature of the town life. The textile industry does not appear to have come to the front until the seventeenth century, when the manufacture of linen was developed, if not introduced, by Mennonite immigrants. Silk was introduced in the latter half of the same century by the Dutch family Van der Leyen, who settled in Crefeld and worked up the business with great energy and success. Under the fostering influence of Royal patronage, free imports of raw materials and a protective tariff against manufactured goods, the Leyen mills throve mightily until they came to employ 3,000 workmen. These happy conditions passed away under French occupation in 1795; free competition with the manufacturers of France hit the German looms, just as it did the English at a later date when the duty on foreign silks was abolished. The re-establishment of Prussian rule and the Zoll-tariff restored their prosperity, and led to a great extension of the industry. Hand looms have gradually given way to mechanical power, the number of mills has increased, and other associated industries—particularly dyeing, the manufacture of colours and of textile machinery—have been developed. The following figures show the average number of looms at work in the various branches of the silk industry in 1892 and 1901:—

	1892.	1901.
Hand looms	13,766	6,551
Power looms	4,816	10,268

The best known institution in Crefeld is the Textile School, which enjoys a wide renown. A silk-weaving school has existed since 1855, and the present building was opened in 1883, when fewer rivals existed than to-day;

but it still holds its own and attracts many students from other countries. It is a fine building, planned on a generous scale, with broad corridors, numerous and spacious rooms, and has an ample installation of machines, a library and an exceptionally complete museum. Like all German educational institutions, it does not try to cover too much ground —a mistake made by some technical schools both in England and in America—but specialises in a well-defined direction. It aims at teaching the Crefeld industries, and it teaches them thoroughly; but it takes account of new branches and helps to encourage them. The total number of students in the winter session of 1901-2 was 252, of whom 136 took the Sunday course, which is open to foremen. In 1895 the institution was extended by the addition of a dyeing and finishing school. The number of students in this department during the same session was seventy-two, of whom fifty-two had previously acquired practical knowledge in the factory; only ten came from the university or technical high school. Special attention is paid to the artistic and scientific studies—design, colour and finish —which are of special importance in silk goods. The fees are £15 to Prussians, £22 12s. to other Germans and £60 to foreigners. The products of the looms are sold; in 1901 they brought in upwards of £225. Besides teaching, the school undertakes the analysis of samples for the trade and gives information to manufacturers, who for their part support and encourage the institution from which they draw their expert skill. There is no doubt that it has been invaluable in maintaining the reputation and industrial efficiency of Crefeld in the face of severe and increasing competition. In 1901 it cost the town £1,436, and the State double that amount.

In 1870 the population of Crefeld was 58,000; in 1900

it was 107,000. It is not increasing so rapidly as many of its neighbours. The curse of the textile town is on it, and the birth-rate is falling. In 1901 it was only 28·5 per 1,000, or nearly twenty below that of the iron towns just across the Rhine, Duisburg and Essen, and more than ten below that of its next door neighbour, the equally textile München-Gladbach. To some extent this is offset by an exceptionally low death-rate, 15·6 per 1,000, which leaves the sufficient margin of 12·9 per 1,000 excess of births over deaths. This is not the place to discuss the obscure and far-reaching problems involved in these matters; but it may be pointed out that a diminished death-rate is not a matter of congratulation in so far as it is merely the sequence of a diminished birth-rate. That is certainly the case to some extent in Crefeld; but apart from that the town is, no doubt, exceptionally healthy. The death-rate from consumption is among the lowest in the ninety-five chief towns of Germany, and that from typhoid actually the lowest. Among the causes of this fortunate state of things are an excellent water supply, superior housing conditions and good earnings. I have already mentioned that the houses run small as houses go in these towns, and the people are therefore less thick on the ground. The average number of persons to each house is only fourteen, compared with 18·7 in Elberfeld, 18·9 in Barmen and 19·5 in Düsseldorf. There does not appear to have been so much difficulty about housing in Crefeld, and, though rents are high, neither the town nor employers have been forced to do much in this direction. There is one Workmen's Dwellings Association, founded in 1900. It has put up buildings to house 128 families in flats of three to five rooms. The rents are from eighty to eighty-four marks per annum, or

1s. 6½d. to 1s. 7½d. a week for each room. Rent elsewhere in the town is considerably higher.

With regard to earnings, the silk mills afford employment to many girls and women, and consequently the family takings are good. They are employed both in weaving and in winding, but particularly the latter, which is generally done entirely by girls. A manufacturer who was acquainted with Bradford informed me that the girls are better paid in Crefeld. Weavers can earn up to 36s. a week, but that is exceptional. The place has been hit by the prevailing depression which set in in 1900, but less severely than its iron and steel neighbours. It has also felt the effects of hostile tariffs, particularly the American; but on the other hand the home market has expanded. Silk is an article of luxury, and as the standard of wealth has risen in modern Germany such articles have come more in demand. Crefeld still exports, but the home trade, which was only 31·46 per cent. in 1878, had become 55·41 per cent. in 1901. In spite of depression the town wears a prosperous look. There is a public-house to every 274 inhabitants, and I have been told that the factory hands drink one-third of their wages. That is, no doubt, too sweeping an assertion; but that it is not entirely a libel I have had some ocular proof. The factories are not large, but modern and good in every respect. I have nowhere seen a more admirably appointed mill than that of Messrs. Krahnen and Gobbers—a model of cleanliness, order and attention to light, air and sanitary arrangements. A great deal of the machinery in use at Crefeld still comes from England—not so much looms, which are now made largely in Germany, as dyeing and printing machines.

The population is chiefly Catholic; of the elementary schools thirty-five are Catholic, nine Evangelical and one Jewish. In addition to the usual higher schools and the royal textile schools already described, there are continuation schools, trade and art handwork schools, and a commercial school maintained by the Chamber of Commerce, with a department for girls. The number of male students in the summer session of 1901 was 369, of whom 314, or 85 per cent., came from the elementary schools; on the girls' side there were 156. They are taught arithmetic, book-keeping, French, shorthand and typewriting.

Crefeld is connected by railways with Cologne, Cleve, Duisburg and München-Gladbach, and, as already stated, with Düsseldorf by an electric line. It returns a Central member to the Reichstag.

Vital Statistics of Crefeld, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
107,762	28·8	15·7	13·1	177

Of the births 5·2 per cent. were illegitimate.

Miscellaneous Statistics.

Police Force.	Public houses.	Churches.	Theatres.	News-papers.	Free Library.
125	398	8	2	16	1

München-Gladbach.

This town with a double name—commonly written M. Gladbach, to distinguish it from another Gladbach in the Rhine Province—is the centre of the chief cotton manufacturing district in Prussia. Germany is not pre-eminently famous for this industry, which is still in a comparatively early stage of development, and consequently the town is but little known to the world; but it has a particular interest for that reason. Here is to be seen a branch of

manufacture in which Germany does not yet excel; and the manner of its cultivation and growth is worth noting.

In 1860 the population was about 17,000; it is now over 60,000, and the increase is due to cotton. There has hardly been a more rapid development in the Southern States of America. And Gladbach is only the centre of a large district more or less given up to the manufacture of cotton with the usual allied businesses. Between 1882 and 1895 the number of persons employed in the cotton industry in Rhineland increased from 20,160 to 36,026, a far more rapid rise than in any other part of Germany. The town itself is old, though the industry is young. It lies rather picturesquely on a hill. Here a church is said to have been built in 793; and on its destruction a couple of centuries later a second took its place, together with a Benedictine abbey which was ruled by a succession of forty-six abbots down to the Napoleonic occupation. The name München is supposed to be derived from the monks (Mönche) who were so long connected with the place. The old minster church remains yet, a stately object, looking down from the steep escarpment of the hill upon the factories spread out below; the crypt dates from 972, and the nave from the twelfth century. A more striking chronological and architectural contrast is seldom seen. The old monastery buildings are now municipal offices. This old part of the town stands apart from the mills, which are spread out on the low ground to the south and east at the foot of the hill and constitute with their workmen's colonies, parks and schools a new quarter. The cotton industry appears to have been brought to Gladbach—which lies on the left side of the Rhine, about equi-distant from Crefeld and Düsseldorf and not much further from Cologne—by manufacturers from the Wupper Valley, who found it convenient for political or

fiscal reasons at the beginning of last century to transfer their cotton business to the other side of the Rhine. Gladbach probably attracted them because it had a good labour market on account of the old hand-linen industry which had long flourished there, but latterly fell on evil days. At that time the spinning and weaving of cotton also was entirely done by hand. The first mechanical spinning plant was only put up in 1845, and spinning is still the weakest spot. In 1895, however, there were in the Gladbach district over 400,000 spindles at work. This is, of course, a trifle to Oldham with its 12,000,000 spindles; but then Oldham has been much longer at it and concentrates more on spinning, whereas Gladbach has a larger proportion of looms running. There is no doubt that Germany means to go forward with this branch of textiles; and an earnest of her intention is to be found in the new technical school opened in 1901 at a cost of £30,000. This is the latest thing of its kind, and in some respects surpasses any other that I have seen in Germany, England or the United States. It concentrates its energies upon the cotton processes, and is divided into three separate sections: (1) Spinning; (2) weaving; (3) dyeing and finishing. The class-rooms are housed in a handsome, red-brick building, and the practical installation adjoining is laid out as a small mill, driven by a steam-engine of 120 horse-power. It is a model in all its appointments, lit from the roof, steam-warmed, provided with electric light and the most recent methods of ventilation. In the spinning section courses are held for manufacturers, managers and overseers. The course lasts one year, and consists of forty-two weeks of forty-four hours each. Sixteen out of the forty-four hours are devoted to practical work. Students must be not less than sixteen years old and have had a good school educa-

tion; it is preferred that they shall have had a year's previous experience in practical work. The fees for the full course are £10 for Germans and £50 with £3 entrance fee for foreigners. The yearly fee for the workmen's course is 30s. It is interesting to note that in the carding process the machines taught are those of Howard & Bullough, Dobson & Barlow, Hetherington, Tweedales & Smaley, Platt, Lord, Asa Lees and the Elsässische Maschinenbau Gesellschaft; in mule-spinning those of Parr Curtis, Asa Lees, Dobson and Barlow, Platt and Threlfall. Lancashire still heads the world in cotton machinery at any rate. They spin up to eighty counts in the school, and there seems to be no reason why they should not spin up to 150 or more with the aid of sprinklers, as they do at New Bedford, Massachusetts. Skill is the thing lacking, and that they are determined to acquire. It is only a matter of time; we may expect to see the art of fine spinning mastered in Germany by-and-by, as others have been mastered by degrees. The other two sections of the school have very much the same conditions, except that the dyeing and finishing course lasts two years. The mill undertakes work for the trade, and thus to some extent realises the conditions of commercial production.

Another sign of industrial enterprise not far from the school is a large colony of workmen's houses erected by the local building society. They are of different sizes, but the most frequent type is a semi-detached, two-storied building, containing four families. They all have gardens and ample space about them. The yearly rent for a dwelling of four rooms is £8, or about 3s. 6d. a week, which is very low for a really good house such as these are, and much less than in other parts of the town. The society gives workmen facilities for purchasing their houses, and a

large number do so. Down to the end of 1902 it had built, since 1869, 615 houses for sale and thirty-one larger ones, housing 7,800 persons in all. A good many houses have also been built by employers, notably the firm of F. Brandts, who have provided many benevolent institutions for their hands, including a park and playground, which is open to the public. The rent for a dwelling of five rooms in these houses is £7 10s. per annum. Taken altogether the housing in Gladbach is decidedly above the average; rents are cheaper, and there is less over-crowding. The mills, many of which belong to companies, are also good. In other respects the conditions of industrial life are favourable. There are at least two public parks and an admirable set of public baths. These institutions figure prominently in most German industrial towns, and are splendidly equipped with large swimming baths, numerous and varied private bath-rooms, medicinal baths, steam engines, electric light, and so on. They are kept beautifully clean, and often have their own water supply from an artesian well. To any one who remembers the Germany of old—when no one could swim, bathing was thought a proof of insanity and washing a dangerous eccentricity—no change is more remarkable than the conversion in this respect. It is largely due, no doubt, to the teaching of hygiene, but also to military training. The daily bath is still exceptional in any class of society, but German workmen and factory hands are cleaner than our own, during the week at least. The sergeants take care of that in barracks, and the habit sticks.

About five-sixths of the population is Catholic and the town is the headquarters of the "Christian Trade Unions," whose newspaper is published here. Their organisations are called "Christian" to distinguish them from the

"Social Democratic" trade unions. They were started in 1894 to meet the views of workmen who objected to the anti-Christian and revolutionary principles of Social Democracy, and their aim is to improve the condition of the workpeople by legislative reforms and organised self-help, independently of political parties. They are counter-organisations to the other "free" trade unions in so far as the latter allow themselves to be exploited by the Social Democratic political party. Further details of this interesting movement will be given under the head of trade unions; it is merely mentioned here in connection with the town. At the recent election the Social Democratic candidate for this constituency was defeated by an immense majority.

Gladbach is connected by railway with Düsseldorf, Crefeld, Cologne and Aachen, and is the centre of a considerable traffic. For the rest it is an unpretending, busy little town, with irregular streets and low houses, rather ragged and unkempt on the outskirts, but not without attraction.

Vital Statistics of M. Gladbach, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
58,532	39·4	18·7	20·7	206

Of the births 4·1 per cent. were illegitimate.

Miscellaneous Statistics.

Police Force.	Public houses.	Churches.	Theatre.	Newspapers.	Free Library.
59	212	10	Winter Season.	—	—

Solingen.

In Solingen one enters a different world. It does not resemble any of the towns previously described, but has a peculiar interest of its own. The reputation of the little place goes back to the Middle Ages, and as it stands to-day it takes one back to them; it produced the same wares then, and to a certain extent it produced them under the

same conditions. No industrial town has been so little modernised, in spite of the appearance of the factory and the building society's activity.

Solingen lies among the hills of the Berg country, almost due south of Elberfeld and on the road to nowhere. This country has great charm in a quiet way, and is very little known. If I remember right, Baedeker passes it over with contemptuous and ill-deserved brevity. But English holiday-makers who do not always want to go where every one else goes might well turn aside here instead of rushing on to the Upper Rhine or some other cockneyfied playground. It is only a few miles beyond Düsseldorf, which is but thirteen hours from London. I commend it to pedestrians and sketchers. They will find a land of deep winding valleys thickly clothed with wood, picturesque villages and old-fashioned inns, running water everywhere, and, tucked away among the hills, artificial but charming lakes of blue water made by damming up the valleys to form reservoirs. For central points there are the noble Schloss at Burg, the model of a mediæval stronghold, and the Dom at Altenburg, the rival of Cologne, hidden away as it is in the heart of the country. These details have something to do with Solingen and its neighbours in more ways than one. The hill-reservoirs supply them with water; the power obtained from the streams explains the selection of this neighbourhood for the cutlery industry, which was originally introduced by the great noble, Graf von Berg, whose family seat was the Schloss of Burg. The brooks, which are innumerable, turned the cutler's grindstone or worked the forge; and to this day more than one of these lovely valleys is but a series of little rural factories extending for miles, one below the other, each with its head of water. The whole countryside is filled with iron and steel hand-

industries, and the two capitals are Solingen and Remscheid. They lie on either side of the deep valley of the Wupper, into which the smaller streams find their way. The former is the headquarters of the cutlery, the latter of the file-cutting industry. There are many minor centres, such as Ronsdorf, Cronenberg and Lüttringhausen; their spires rise against the sky-line, for it is a peculiarity of this country that the towns are on the high ground; they look at each other across the valleys. So it is with Solingen and Remscheid. The railroad which joins them crosses the valley at Müngsten by the famous high-level bridge, which was opened in 1897. It leaps the river by a single span 520 feet long and 348 feet above the bed of the stream. The view from the bridge is striking. The only blot on the scene is the unfortunate Wupper, which still carries the foul burden of Elberfeld's refuse and trails its inky slime—a broad, black sewer—through the green woods for miles and miles past cottage and castle. The clear little brooks, hurrying down from the side valleys, disappear for ever in its filth; all beauty and romance die at its poisonous touch. How long are people here going to put up with this abomination?

Solingen fits well with the neighbourhood. It is delightfully old-fashioned and remote, a maze of little crooked hilly streets, queer turns and corners; full of houses small and low—really cottages—green-shuttered, laced with timber beams or faced with slates. It has a population of 46,000 or so, and is the centre of a populous district; so we must call it a town, a busy, brisk and cheerful country town, though it has rather the characteristics of a large village. Sheffield must have been like this once long ago. The people are all engaged in the cutlery trade or minister to it; about 29,000 are employed in and about Solingen. They make knives and forks, scissors and

swords. The art is believed to have been brought from Damascus by Graf von Berg on his return from the Crusades; but an alternative theory traces it to importation from Styria. However this may be, Solingen workmen early acquired a wide reputation and sometimes took their skill far afield. One of the names found on old Toledo blades is German and still borne by cutler families in the place. The art was jealously guarded by the old guilds—the smiths, temperers, grinders, and finishers—who strictly limited the apprentices and the output. Every master had to have a trade mark, which was registered by the local authority, nailed up on the church door and had a legal validity. The famous sign of the Twins dates from 1731, when it was registered by Peter Henckels; it has been borne by the same firm ever since. Their factory is the largest in the place; but out of 2,000 workmen only 800 are employed in the works; the remaining 1,200 work at home. This is the rule; the great bulk of the industry is carried on at home, as in old times, on the "chamber system". It is encouraged by the local authority, which provides the men with gas and electric power, in lieu of the old water wheels. It has thus been preserved and developed alongside of the factories, which first came in during the last century and helped to revive the trade which had come to grief during the French occupation. (How often one hears the same story of Prussian industries!)

I have had no opportunity of observing the conditions under which this "dangerous" trade is carried on at home; but they cannot be worse than those prevailing in the tenement chambers at Sheffield, and are probably better. In 1898 the Government Factory Department at Düsseldorf issued a special order in consequence of the prevalence of

phthisis among the grinders. In the ten years 1885-95 72·5 per cent. of the deaths among knife-grinders in the Solingen district were due to phthisis, against 35·3 per cent. for the rest of the population over 14 years of age; and an official medical examination showed that out of 1,250 grinders, only eighty-five were over forty five years old. These facts, which are all the special information I have on the subject, hardly warrant any conclusion without further details; and I notice that the death-rate from consumption in Solingen for 1901—namely 3·1 per 1,000—although above the average for German towns, is exceeded elsewhere—for instance: Breslau, 3·4; Ludwigshafen, 3·4; Treves, 3·2; and Heidelberg, 3·2. The average for the whole of Germany in 1892-1900 was 2·4. One is therefore rather surprised that the Solingen figures are no higher; the place is fairly healthy, in spite of the occupation, as the general death-rate—18 per 1,000—sufficiently proves. As I have said, however, the departmental authority issued a special order relating to the installation of grinding shops and the removal of dust. In the Henckels Works the arrangements are quite admirable. Great cleanliness is observed in the smallest details, light and ventilation are ample, extracting fans carry off the dust more efficiently than I have ever seen it done anywhere else, and everything tending to raise dust is carefully eliminated as far as possible; the driving straps and wheels are lodged in a gallery or passage between two shops, and therefore outside the room; the stones and emery wheels are protected by special and ingenious hoods. There are other factories in the place equally good, and I should like to have the opinion of Sheffield manufacturers upon them. I know their opinion of German cutlery, and it would surprise those complacent Englishmen who still think the word "German" is

synonymous with "inferior". Cheap and inferior cutlery is turned out at Solingen, but the German manufacturers also produce goods of first-rate quality, and are able to compete with Sheffield on their merits. I should not venture to say so on my own judgment, but my authority for the statement is the highest. That they turn out very beautiful things cannot be denied; I have seen exquisite specimens of damascened, inlaid, and other fancy work. I recently bought a pocket-knife for a boy in London. After looking at a great many patterns I picked one out and asked: "Where does this come from? Solingen?" The man did not know what I meant but said: "That is by a German maker". "Ah! I thought so; it is from Solingen." "Well," said the man apologetically, "they are much better finished than these made in Sheffield." And it was true. The superior Solingen cutlery is not cheap; the material is the best crucible steel made from Swedish iron, the same as Sheffield uses. An extraordinary thing about the cutlery trade is the almost incredible variety of knives made. At the Suffolk Works in Sheffield, for instance, they have 10,000 different patterns on the books, and will be actually making 3,000 to order at the same time. I found just the same thing at Solingen; Henckels have 9,000 patterns for Germany alone. Every trade, every country and even every district has its own knives; the Somerset ploughboy wants a different knife from the Yorkshire ploughboy, and new patterns are constantly coming out; the Suffolk Works have averaged ten new patterns a week for two years. This is a trade which will not be standardised, and that is one reason why America has hitherto failed to compete. Let the fact be noted to the credit of European alertness and attention to the needs of the market.

The cutlers of Solingen are highly organised in all branches of the trade, though I do not find them down on the lists of any of the large trade federations. The employers also are organised, and there is a joint machinery for settling disputes and prices, similar to that of the Lancashire cotton spinners. Boys are usually taken as apprentices; this is looked after by the unions, who limit the number. Very few girls are employed. Wages are very much the same as in Sheffield. The appearance of the factory has set up the usual housing difficulty, which has been met by building societies. They borrow money from the Landesbank of the province, and the town guarantees 3 per cent. interest. The houses built are of two kinds: (1) Small houses for minor officials; (2) larger ones containing four to six families of workmen. The average weekly rent is about 1s. 6d. a room. Many of the workpeople in the district own their houses; and it is the custom of the place for them to keep a goat, the "poor man's cow". There are 14,000 goats in the Solingen district.

The population is mainly Evangelical, in the proportion of three to one. Although a comparatively small place, the town has been educationally in advance of many of its larger neighbours, and adopted compulsory continuation schooling sixteen years ago. Solingen is one of the constituencies which went over to Social Democracy at the election of 1903.

Vital Statistics of Solingen, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
45,775	34·5	17·9	16·6	170

Of the births 2·4 per cent. were illegitimate.

Miscellaneous Statistics.

Police.	Public-houses.	Churches.	Theatres.
31	328	—	None.

Seven towns have now been described in considerable detail. They have been selected in order to represent a number of different industries and to give a fair general idea of the conditions of life in some leading Prussian manufacturing communities. The list might be indefinitely extended, and in every town added some variations and peculiarities would be noted; but there would be a great deal more of mere repetition, and even if space permitted I do not think much would be gained by it. Anything like a comprehensive list is quite out of the question; the number of towns and villages engaged in manufactures is far too great to permit even of the scanty treatment of a gazetteer in detail. One must make a selection, and I have done so to the best of my judgment. The places described, however, although very varied, are all in one Government district, and I will, therefore, add a few notes on Aachen and on some of the Westphalian towns, of which Dortmund is the most important.

Aachen.

Aachen, better known to English readers as Aix, is the capital of the most westerly division of the Rhineland. It lies hard on the Belgian frontier and on the main line from Brussels to Cologne. It is separated from the manufacturing Rhine district of Düsseldorf by an extensive stretch of flat agricultural country, which gives way to hills and woods near Aachen. The town itself lies on hilly ground and in the neighbourhood of extensive coalfields. Of its famous historical past I need say nothing, except that the principal remains—the minster, town hall, central ring formation, and one or two old gates—give it considerable dignity and interest. The town hall is especially fine. Although the body of the building dates from the fourteenth century, it is more

commanding and impressive than the most ambitious modern town hall I have seen, which is, I should say, that of Philadelphia. It overlooks the market-place, which on market days presents a busy and characteristic scene. Covered markets are much less common in German than in English industrial towns; perhaps the more settled weather makes them less necessary; but the old-fashioned open-air booth markets are held regularly, as they have been for centuries. They form a picturesque element in the life of the people, and have an attraction for housewives which the co-operative store wholly fails to replace. It is human nature, immemorial and unchanged among the people—that rock whereon economic theories are perpetually foundering.

As a modern town of medium size Aachen is well-ordered and comely enough. Its waters still attract some 70,000 visitors annually, of whom 20 per cent. are English. The population is about 136,000, overwhelmingly Catholic (about twelve to one), and not growing so fast as that of most of the industrial centres previously described. The natives have a character for gaiety and humour; they vie with Cologne and Düsseldorf in the annual plunge into licensed insanity that lasts for three days at carnival time. For the rest of the year they are as industrious as their neighbours. As regards manufactures, Aachen is largely a woollen town; it spins and weaves and dyes woollen and worsted goods, and it supports a textile school especially devoted to those branches of manufacture. The present school was built in 1888-90. It is divided into four departments: (1) Weaving, (2) spinning, (3) finishing, (4) dyeing; and aims, like the Gladbach school, at providing practical experience on a commercial scale by manufacturing for the trade, for which it has the

requisite installation. Its strong point is dyeing. The conditions of study are very much the same as those in the similar schools previously described; but the courses are somewhat shorter, and the fee for foreigners is only £40 a year. Evening courses are given to foremen and workmen for 30s. and 10s. per annum respectively. The present number of students is about one hundred, of whom twenty-five attend the evening courses. A unique feature is a course of instruction for women and girls in darning or making good defects in woven cloth. The school, which was originally started in 1883 by private enterprise, is still partly supported by the "Aachener Association for the Promotion of Industry," a remarkable society which dates from 1825 and now possesses a capital of over six millions sterling. Its revenues are devoted to the support of a large number of benevolent institutions and other public objects. In addition to the wool industry, Aachen is famous for the manufacture of needles, a trade introduced in the sixteenth century from the Spanish Netherlands, and so faithfully preserved and developed that the town has almost a monopoly of the home market and is a formidable competitor in the markets of the world. Some of the factories are quite inside the town, but the majority are on the outskirts. The textile mills number about one hundred, and employ some 15,000 workmen. Just outside the city are the famous Rothe Erde iron and steel works of the Aachener Hütten-Actien-Verein. The equipment for the production and manufacture of Bessemer and open-hearth steel is one of the most complete and modern in Europe. Aachen is the seat of the only "Technische Hochschule" in the whole of Rhineland and Westphalia, which seems somewhat singular considering their pre-eminent industrial importance.

Vital Statistics of Aachen, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
136,275	34·6	20·2	14·4	214

Dortmund.

Dortmund is the commercial capital of Westphalia and a place of importance, though not the seat of a provincial Government. It lies in the great coal basin which, as I have already pointed out, runs due east from the Rhine, where the river Ruhr joins it, and is the actual begetter of that remarkable chain of iron towns—Ruhrort, Duisburg, Oberhausen, Essen in the Rhine province and Bochum, Hagen, Hörde, Dortmund, Hamm, and others in Westphalia—that form one of the greatest assets in Germany's wealth and industry. It is in this series of towns that the Social Democratic party obtained such a large accession of votes in the last election to the Reichstag. Nor is the reason far to seek, if the mere observer of social conditions, apart from politics, may be allowed to have an opinion. The population consists mainly of coal-miners and iron-workers; and these are the backbone of the trade unions which have been sedulously cultivated by the Social Democratic party for years. Further, it is just these industries that were most affected by the depression of trade which set in in 1900 and lasted until recently. Many were thrown out of work and a great many more reduced to short time. At a large trade union meeting of miners held in the spring of 1903, it was stated that the earnings of half the membership had fallen 73 per cent. since 1900. The men were just in the humour to vote for a political party which promises them a great improvement in their condition, whether they believe in the promises or not. It stands for change of some sort.

Such is the region of which Dortmund is the centre. The town is surrounded by coal mines, coke-ovens and iron-works, and is the terminus of the Dortmund-Ems Canal, a fine engineering, but not, I believe, a commercially successful, undertaking. The population, which has increased very rapidly of late years, now numbers about 146,000, of whom rather more than half belong to the Evangelical communion. The industrial development has taken place on the outskirts of the town. The central part is old and interesting, and of much the same type as Aachen, for Dortmund, too, has a history. It was a walled city from very ancient times, a Hansa town and the seat of the mighty Fehmgericht. The old walls are now exchanged for wide boulevards, but I notice that towns of this class are generally less well provided with parks and open spaces than those with a less stirring past. Dortmund is officially important as the seat of the head post office of the province, and it derives from this distinction the advantage of possessing a magnificent building. The State generally houses itself well in Prussia, and the post offices are particularly handsome and solid structures; but the Dortmund head office is quite exceptional. I have nowhere seen anything of the kind so fine. There are some other good buildings, including a very interesting old guildhall and a similar restored town hall, no longer used. Educationally the only point to be noted is a technical school of engineering. Like the other iron and coal towns, Dortmund has a very high birth-rate. Here lies the assurance of Germany's strength—her abundance of children. Truly she has her quiver full of them. In the country coal districts the birth-rates are still higher, and sometimes go up to 60 per 1,000. The conditions of life seem very good in the rural coal region about Dortmund. The colliers live in single cottages with gardens,

very tidy and clean-looking, and stretches of cultivated land separate each pit settlement from the next. The Westphalians are a race of great character, reminding one in many respects of the Yorkshire folk, just as their land strongly resembles Yorkshire; they are very independent, reserved, self-willed and conservative—a sturdy, vigorous stock.

Vital Statistics of Dortmund, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
146,408	43·0	19·9	23·1	190

Of the births 4·5 were illegitimate.

Next to Dortmund, the most important town in the Westphalian manufacturing district is Bochum, with a population of about 67,000 (1901). It lies half-way between Essen and Dortmund on the main line and belongs to the same class of industrial community, being the seat of some of the largest iron and steel works in Germany and of a number of subsidiary metal manufactures such as tubes and wire. It owes its rise as a town, which has been very rapid, wholly to the development of these industries; and its appearance attests the fact, for few places in England present a more uncompromisingly coal and iron aspect.

Hagen runs it hard in population, in industrial production and in smokiness. This is a town of 64,000 inhabitants, lying a little to the south, but in the Ruhr district, and with all the Ruhr character. I do not think any one who makes a tour of these places will contend that the prevention of industrial smoke is secured much more effectually in Germany than in England. My own impression is rather to the contrary, with some exceptions, though I readily admit that German towns are much

brighter, cleaner, and less dingy than English ones. But that difference is chiefly caused by the comparative absence of domestic, not of industrial, smoke, in consequence of the different mode of domestic warming.

Where smoke-producing works are carried on they emit as much smoke as in England in proportion to their size and number. The works at Hagen are numerous and varied, but the chief products are the smaller iron and steel wares—tools, machine tools, hardware, spades and shovels, files, saws, locks, screws, and so forth. It may be said to resemble the South Staffordshire towns in its industrial character. The importance of Hagen is considerably enhanced by its being the seat of the principal school of engineering in the district. Bochum has a mining and a metallurgical school.

I will conclude this section with a table giving the very remarkable vital statistics of the chief industrial centres in the Ruhr district.

Vital Statistics, 1901.

Town.	Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
Alten-Essen	34,599	54·1	24·8	29·3	239
Bochum	66,917	42·4	25·1	17·3	184
Dortmund	146,408	43·0	19·9	23·1	190
Duisburg	95,350	46·1	21·2	24·9	182
Essen	187,385	46·1	20·7	25·4	165
Gelsenkirchen	37,560	49·0	25·0	24·0	190
Hagen	64,042	39·2	18·5	20·7	167
Hamm	31,695	39·4	17·2	22·2	162
Hörde	25,822	47·1	20·5	26·6	185
Mülheim	39,079	39·0	19·2	19·8	208
Oberhausen	43,547	50·2	20·7	29·5	221
	Mean	45·0	21·1	23·9	190

The remarkable fact about these figures is the very high vitality of the population shown. The group of

towns may fairly be compared with the South Staffordshire group in England, which also have an exceptionally high birth-rate among English towns and are inhabited by a population engaged in very similar occupations though the coal-mining element is larger in Germany. The following are the comparative figures which speak for themselves:—

MEAN VITAL STATISTICS, 1901.

	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
German group . . .	45·0	21·1	23·9	190
English group . . .	34·8	17·5	17·3	178

SAXONY.

If the Rhine-Westphalian region just described may be called the Yorkshire of Germany, the kingdom of Saxony is its Lancashire. The population is nearly the same—4,202,216 (1900)—and if not equally, at any rate chiefly, engaged in manufactures of a not dissimilar character, combined with a certain amount of mining. But in Saxony both the mining and the manufactures are more varied. Lancashire is virtually given up to cotton and coal; it spins, weaves, dyes and prints cotton for all the world, and makes machinery for doing these things; if they are taken away what is left amounts to very little, for various other once flourishing industries—paper, glass, watches and hats—are either decayed absolutely or have become relatively unimportant. Saxony is less dependent on a single article. Its mines produce silver, lead, copper, arsenic, bismuth, nickel, zinc, iron, and other things, besides coal, and its manufactures are very varied. Out of 550,000 work-people, 185,000 are engaged in textiles, 81,500 in engineering and machinery,

35,500 in the preparation of metals, 30,000 in papermaking, 36,000 in clothing, 51,000 in mining and quarrying, 7,000 in the production and smelting of ores, 6,000 in leather and 5,000 in chemicals. The textiles alone show much diversity. They include the spinning and weaving of cotton, wool, worsted, jute, silk and linen into a great number of articles —cloth of different kinds, ladies' dress materials, underclothing, men's neckties, furniture stuffs, carpets, curtains, thread—and the manufacture of lace, stockings and gloves of cotton and silk. These, with the machinery for producing them, constitute the most important branches of manufacture. They are carried on in all the five districts into which the kingdom is divided. It is a veritable hive of industry, more thickly populated than any other section of Germany or than any other European country. The number of inhabitants to the square kilometre is 280; the little principality of Reuss (the elder), which adjoins Saxony and is of the same industrial character, comes next with 216, and then the Rhineland with 213 (though it should be noted that the density of the special industrial area of Rhine-Westphalia is much greater, reaching 1,639 at its highest point). England and Wales come just between these two with 215; and all three are a little behind Belgium, which has 229 and is the most densely populated country in Europe next to Saxony. The manufactures rather cluster round the larger towns, but are by no means confined to them. As in Lancashire and Yorkshire, they overflow, so to speak, into the smaller towns and villages, which in some districts form a continuous series of factory settlements, particularly along the rivers. It is, no doubt, largely due to the excessive competition thus engendered that wages are so much lower here than in Prussia. The Saxons are a prolific race; from 1816 to 1900 they have maintained a

higher mean rate of increase than any other section of the German people. They have had to work very hard to keep their place; over and over again in the history of their industries some staple branch on which they relied has been reduced by competition to an unremunerative level and has been given up. Theirs is no story of facile conquest and sudden industrial development, but of steady labour and unremitting effort. The Saxons are a brave, solid, industrious and friendly folk. No one can help liking and respecting them.

Chemnitz.

The largest towns in Saxony are Leipzig (456,124), Dresden (396,146) and Chemnitz (206,913). The figures are from the census of 1900. The present population of Chemnitz is reckoned to be about 230,000. It is the most important manufacturing centre in the kingdom, for Dresden and Leipzig, though the seats of extensive manufactures, are not primarily or principally industrial. The one is the capital and the seat of Government; the other is the chief centre of trade. But Chemnitz is of the pure industrial type and the largest single town of that type in Germany, though Barmen and Elberfeld, which actually form one community, exceed it together. Chemnitz is often called the Manchester of Saxony, and the inhabitants appear to take some pride in the nickname; but in my opinion it is not very flattering and would be better applied to Leipzig. I have already described Manchester, and will merely repeat that however admirable the busy energy of its inhabitants may be, no one can call it pleasant to the eye. It has all the defects of a great city in an exceptional degree—the crowding, noise, vice, squalor and grime—and they are not relieved by pleasant country surroundings, which is the happier case of the equally grimy and un-

lovely Sheffield or Leeds or Elberfeld. Now Chemnitz bears no external resemblance at all to Manchester, though its industrial activity runs on similar lines. It is a clean, rather quiet place, not devoid of picturesqueness. Its heart is a ring, once walled and towered; and a ring has always the flavour of a romantic past, though hardly a trace of the fortification remains. Chemnitz is an ancient place with a history very much like that of several towns already described. It began with a religious foundation in the Middle Ages, became a market town and trading centre, secured independence and self-government for a time, but went through the usual vicissitudes incidental to the quarrels or bargains of overlords. Of course the Thirty Years' War, which figures somewhat monotonously in the history of all the larger German towns, did not spare a walled city lying on the high roads from Prague and Nürnberg to Leipzig and the north. In spite of all the regular visitations, however, Chemnitz continued to maintain and increase an industrial position first gained in the fourteenth century, very much as Elberfeld gained hers, by securing a monopoly of the right to bleach the linen produced in the neighbouring villages; but, unlike Elberfeld, it has not destroyed the river to which it owes the origin of its prosperity and importance. The little Chemnitz still flows bright and clear through the town, and adds in no small measure to its attractiveness.

As the industries and the population increased during the last century new streets were thrown out in all directions in an ever lengthening radius from the central ring. They are tidy streets of an unpretending character with quite good shops. There is something homely and friendly about the whole place. The factories are not hidden away in the background, but are all about and very much in the fore-

ground; yet they are singularly inoffensive. The atmosphere is clear and the buildings unblackened. The ground is varied, rising steeply to the Kassberg on the western side of the river, which flows due north through the heart of the town. The open spaces, market places, parks, and so on, are unusually abundant and attractive. One of these is connected with the Schloss, which is really the old Benedictine Abbey, and now belongs to the city. Few towns, industrial or other, have such a charming playground so close at hand. There is a large sheet of water with an island, flower gardens and walks, overlooked by the Schloss, and on higher ground at the back an extensive and wooded park. Another fine open space quite in the town is the Schiller-platz, with a large market-place adjoining. Between them stands, conspicuous and imposing, one of the numerous modern churches which testify to the piety of Protestant Saxony and are not less striking than those of the Catholic Rhineland noted above. This church was built in 1888; it has a lofty spire, and high up a clock dial illuminated at night, a welcome landmark to the stranger uncertain of his way. I owe no little gratitude to that church. Some other buildings on the Schiller-platz are worth noting, as signs of the industrial character of the place. At one end is the largest cotton mill in Saxony. Chemnitz is the headquarters of cotton-spinning; the first rude machine was set up there in 1782, and many efforts were made to improve it, as the spinners found it impossible to obtain the superior machines of England and France. In those days the secrets of machinery appear to have been much more jealously guarded than they are now. One country would not allow its inventions to go to another, nor were foreign workmen or students allowed in the shops where such things were made. It was not until the nineteenth century that cotton-spinning machines

were brought into Saxony from England and France. There was the same trouble with wool-combing and spinning. The secret of the English machinery was first brought into Germany by a Thuringian manufacturer, who went to England to learn it disguised as a journeyman carpenter. In this capacity he was able to study the construction, and on his return he built himself a machine; but he also kept it to himself. The Saxon manufacturers failed to learn the secret until about 1820, when they obtained machines from France. To this day spinners and combers are the most jealous of all manufacturers, except chemists, and many of them will not allow their dearest friends to enter the mill. Such exclusiveness is quite as common in England as in Germany, but the trade in machinery is no longer kept close. Indeed, the prosperity of Lancashire and Yorkshire has for many years largely depended on the exportation of textile machinery; and the increasing independence of Germany in this respect is one of the most significant signs of her increasing industrial efficiency.

No town has contributed more to that independence than Chemnitz. Its pride lies in the production of machinery and tools even more than in the textile branches of manufacture. Some large works make it in certain lines the most important centre for machinery in Germany. The Sächsische Maschinen Fabrik and the Chemnitzer Werkzeug Maschinen (machine tools) Fabrik are known all over the world, and will be better known, unless I am much mistaken. The workshops of Manchester, Oldham, Keighley, and other machinery centres have no more formidable competitors in the markets of the world. The rise of the Sächsische Maschinen Fabrik is a worthy counterpart to the story of Krupps. The beginning of machine building in Chemnitz dates from 1826, and the pioneer was a man

named Haubold. He built the first steam engine in 1829, and to his workshop came one day a young mechanic named Richard Hartmann, in search of work. Hartmann was born in Elsass in 1809, and was not only an uncommonly good workman, but something of a genius. He got work at once at Haubold's; but after a few years, having ideas in his head, he started a little workshop on his own account with three journeymen. That was in 1837. In 1841 he had got on so well that he moved into larger premises, where he employed seventy-six men, and the same year he delivered his first steam engine. He then built himself a new factory and added locomotives to his output. The first was delivered in 1848. He next went on to build looms for the local industries, and in 1854 he set up his own foundry. This was about the time when the tide of fortune turned for Alfred Krupp and began to flow steadily onwards. Hartmann appears to have never looked back. He went on from one branch of engineering to another, adding machinery for mining, milling, all kinds of textile work and other manufactures, besides machine tools. In 1870 he sold the works to a company for nearly half a million sterling, but retained his connection with the concern, which continued to prosper and is still better known by his name than by that of the company which it bears. At the present time when in full work it gives employment to about 5,000 men, and turns out all kinds of engines, locomotives, locomobiles, boilers, turbines, cranes, hammers, rails, tires, rolling mills, machinery for mining, for saw and flour mills, for manufacturing paper, guns, torpedoes, and every kind of textiles. They manufacture very largely for the export market and send their goods all over the world. This is not altogether the "dumping" of surplus production, for it has been going on very steadily for

many years. Between 1880 and 1890 the foreign orders amounted to nearly one-third of the whole. Dumping is a blessed word, but Englishmen will be well advised not to trust too much to its consolations. We have done a good deal of dumping of our own in our time, and then it was called legitimate trade; but we do uncommonly little now in Chemnitz. The workshops of the Sächsische Maschinen Fabrik contain a number of the beautiful automatic gear-cutting and screw-making machines by Brown and Sharpe, of Providence, but only one solitary English machine, and that an old one. The works cover a great deal of ground, and the shops are admirable, well lighted, orderly and beautifully clean. A large new foundry, recently built, is a model. The only foundry I have seen equal to it is, oddly enough, that of Brown and Sharpe, but the latter is on a much smaller scale.

Among the other prominent industries of the town are hosiery and gloves, chiefly of cotton. Chemnitz is the headquarters of both trades, and among the firms which carry them on is an English house, the Nottingham Manufacturing Company, which has mills also at Leicester and Loughborough, I believe. The knitting machines are still chiefly English, and England is one of the chief markets for the goods. The United States used to be a great customer, and still is to some extent; but the trade, which underwent a great expansion about twenty years ago, has been hard hit, like many another, by the Dingley tariff. The yarn is chiefly spun in Chemnitz and the neighbourhood. The work-people employed in the knitting mills are mostly girls and women, who make about 10s. a week. The employment is not arduous and seems to be healthy; the rooms are comfortable, well ventilated, well lighted and warmed in winter; and the girls look very well and strong.

The weaving industry in Chemnitz has gone through many vicissitudes, and is not so important as it used to be. At one time calico was one of the staple products of the town, but after 1840 the trade declined, and coloured cotton goods, particularly ginghams, took its place. These in turn were forced out of the market by excessive competition, which depressed wages below a living standard and compelled weavers to turn to something else. They then took up wool and mixed goods of wool and cotton or silk, for dress materials and neckties in particular. To these were added furniture stuffs—tablecloths and curtains—woven in patterns on Jacquard looms, which had been introduced into Saxony in 1827. The latter trade increased and flourished, as did the half-silk goods, but the neckties yielded to the vicissitudes of fashion, and in half-wool dress materials Chemnitz was beaten by its neighbours, Glauchau and Meerane, which are now the chief centres for these articles. Another branch of textiles on which the Chemnitz weavers have tried their hands with more lasting success is parasol and umbrella cloth.

I have just mentioned Glauchau and Meerane, and may as well take this opportunity to say a word about some of the more important industrial towns of Saxony outside of Chemnitz. They are very numerous, as I have already said, and their products tend to run in the same general lines, but with special developments.

Glauchau is a town of about 26,000 inhabitants in the Chemnitz district, and one of the oldest seats of the textile industry in Germany. Cloth-weaving is mentioned in 1422 and linen in the following century; cotton was introduced in 1713. The principal trade is now in superior dress materials for ladies. All the processes are carried on here

—combing and spinning, weaving, dyeing and printing. Basket-making is another local industry.

Meerane is also a wool town, not far from Glauchau and about the same size (24,000). In addition to dress materials they make underclothing and carpets. In the winter of 1902-03 the weavers came out on strike for three months, and in the end obtained an increase of wages.

Zwickau is the centre of an administrative county, and a place of somewhat more importance, with 56,000 inhabitants. In addition to textile manufactures of wool, half-wool and cotton, it has a good many metal and chemical industries—lead, copper, quicksilver, alloys of copper, zinc and nickel, nails, wire ropes and lacker, as well as glass and porcelain. There are numerous coal mines in the district.

Plauen (74,000), in the Zwickau county, is, next to Chemnitz, the largest of the purely industrial towns of Saxony. It is the centre of an important textile district, particularly for worsted, the headquarters of which in Saxony are at Reichenbach (25,000), about half-way between Plauen and Zwickau. In Plauen they also make thread, lace, carpets, cotton and mixed dress goods. At Ölsnitz (14,000), in the same neighbourhood, the manufacture of Axminster carpets is a specialty.

Freiberg (30,000) lies between Chemnitz and Dresden, and is distinguished as an educational centre. It is the seat of one of the two special high schools of mining in Germany; the other is at Klausthal. The industries carried on at Freiberg are chiefly engineering, metals and chemicals.

Bautzen (26,000) lies quite in a different direction in the north-east corner of Saxony, near the Silesian border. Besides cotton, wool, hosiery and machinery, it produces a specialty in the form of musical instruments.

Meissen (20,000), near Dresden, deserves mention as a

pottery town. The Royal Works, where Dresden china is made, are here, as well as other pottery establishments.

It will be seen, even from this selected list, that the manufactures of Saxony are much scattered about in small towns; but the places mentioned are the more important centres, and only a fraction of the total number. They are all surrounded and interspersed by lesser ones. In Saxony, indeed, the idea of having the manufactures in the country rather than in the town is to a large extent realised; and this does something to relieve the urban overcrowding, which is still more marked than in the Rhineland. But the lack of housing is so great that overcrowding extends to the villages. The average number of households to each inhabited dwelling in the villages of Saxony is two, and the average number of persons 8·85. In the manufacturing counties of Zwickau and Chemnitz the number of households per house rises to 2·17 and 2·45 respectively, and the number of persons to 10·01 and 10·67. That is in the villages alone. It is partly due to the fact that in the larger towns many of the factory hands either cannot find lodgings at all—cottages are not to be thought of—or cannot pay the rents, which amounts to the same; and, consequently, they live in the surrounding villages. This is particularly the case with Chemnitz, and the practice is facilitated by the electric trams. The work-people travel in and out every day a distance of an hour or even two hours' journey. Thus it happens that in the villages round Chemnitz the average number of households is 2·94, and of persons 12·77 to a house. Near Dresden and Leipzig the figures are still higher. Of the towns Chemnitz itself is the most overcrowded. Tenement life is universal, the average number of households is 6·87, and of persons 29·16 to a house. In the most densely-populated parts

the number of persons to a single house runs from 130 to 173.

It is not surprising, therefore, to find a high death-rate, and particularly a high infantile death-rate. In Chemnitz the latter is enormous, and needs some further explanation. The town may fairly be compared with Elberfeld, which also suffers from overcrowding; but in 1901 the general death-rate in Elberfeld was 17·0 per 1,000 living and the infantile (under one year) rate was 165 per 1,000 births; the corresponding figures for Chemnitz were 23·8 and 331. One third of the children born died within a year, and out of 5,000 deaths among the whole population, 2,744, or considerably more than half, were of children less than a year old. In fact, if the infantile deaths be deducted, the general death-rate is low. The subject is discussed at some length in his annual report by the medical officer. It appears that no epidemic fever accounts for the fact; nine-tenths of the deaths were ascribed to "gastric and intestinal catarrh and atrophy," otherwise inflammation of the digestive tract and malnutrition. The causes he suggests are lack of medical advice (a doctor was only called in 8·1 per cent. of the cases), bad housing, overcrowding, bad feeding and dirty feeding-bottles. No doubt these are all effective causes, but they are not peculiar to Chemnitz or to Saxony, and they do not go to the root of the matter. An examination of the infant mortality over a wider area reveals several facts—(1) It is excessive throughout Saxony as a whole; (2) but far higher in the textile districts than in the others. Zwickau is nearly as bad as Chemnitz. In 1900 the infantile deaths were in Zwickau 33 per cent. of the children born, in the town of Chemnitz 36 per cent., and in the district of Chemnitz 40 per cent.; whereas in Leipzig they were 24, in Freiberg 23, in Dresden 20 per cent., and

in other parts still less. If we further compare the textile districts in Prussia we find two things: a lower infantile mortality and also a lower birth-rate. If we go still further and compare the English textile towns we find both again lower, but the birth-rate very much lower. These facts bring us face to face with one of the most profound and important problems of civilisation. The higher infantile mortality in Saxony cannot be attributed to inferior education, for that kingdom, which has for years made continuation schools general and compulsory, is distinctly ahead. The real explanation I believe to be this. In Saxony wages are low and the people have never learnt to enjoy and look for a high standard of comfort. They still take life as it comes, and it comes with many children. Some of these are weak, and the parents let them die. The fact that a doctor is not called is most significant of their attitude. They take death as it comes, too; it is part of life. And more children succumb in textile than in other districts because the mothers go out to work. This may seem very sad and shocking, but the alternatives are worse. I cannot discuss the subject further here ; but I have drawn attention to it in connection with Saxony, because that country presents us with an example of the more natural way of life, which is becoming rare. Nature's way is to produce a large surplus and, by eliminating the weak at the beginning of life and selecting the strong, to make the race vigorous. Many people think they know a more excellent way but they may be mistaken.

The educational provision in Chemnitz is exceptionally complete even for Saxony, which is pre-eminent in this respect. I will therefore devote some little attention to it.

In 1901 there were twenty-six primary schools (*Volksschulen*), divided into three classes: (1) Lower (*einfache*),

(2) middle, (3) higher; (1) and (2) are called *Bezirks-schulen*, (3) are *Bürger-schulen*. The schools and scholars were thus distributed:—

PRIMARY SCHOOLS.

Class of School.	No. of Schools.	No. of Scholars.	Boys.	Girls.
Lower . . .	16	23,120	10,565	12,555
Middle . . .	7	6,128	3,571	2,557
Higher . . .	3	2,240	1,109	1,131
Totals . .	26	31,488	15,245	16,243

The proportion of scholars in each class of schools was:—

	Boys.	Girls.	Total.
Lower . .	69·3 per cent.	77·3 per cent.	73·4 per cent.
Middle . .	23·4 ,,	15·7 ,,	19·4 ,,
Higher . .	7·2 ,,	6·9 ,,	7·1 ,,

The total number of classes in the twenty-six schools was 764, of which 692 were in the *Bezirks-schulen* and seventy-two in the higher *Bürger-schulen*. The average size of the classes was: In the lower school, forty-three; in the middle, thirty-nine, and in the higher, thirty-one. The staff numbered 565, thus composed: Headmasters, twenty-seven; teachers (male), 455; teachers (female), nine; assistant teachers (male), sixty-eight; assistant teachers (female), six. There were therefore 550 male to fifteen female teachers; but in addition to the foregoing, instruction in needlework and housework was given by twenty-four female teachers, making a total teaching force of 589.

In Saxony elementary schooling is not free. The regular school fees in Chemnitz are: Lower schools, 4s. 9½d. per annum; middle, 19s. 2½d., 21s. 7d., 25s. 5d., according to the classes; higher, 48s. and 60s. Payment, however, is not enforced from very poor parents unable to pay.

All the foregoing schools belong to the Protestant confession, which is overwhelmingly preponderant in Chemnitz.

There is, in addition, one Roman Catholic primary school, corresponding with the lower class, having 747 scholars, thirteen teachers and an average of thirty-nine children to a class; school pence, 4s. 9½d. per annum.

Continuation schools are compulsory in Saxony for boys from fourteen to seventeen. In Chemnitz there were in 1901 eight such schools attached to the primary schools, including one connected with the Roman Catholic school. The total number of scholars was 3,429. The fee is 2s. per annum.

For girls special classes are held for instruction in housework, and particularly in cooking; they were attended by 481 scholars.

These, however, form only part of the continuation school provision. There are others of a more technical kind, and scholars attending them are excused from the ordinary continuation schools. They include a general artisan (*Handwerker*) school for lads, a corresponding one for girls and special trade schools conducted by trade guilds, for tailors, druggists, innkeepers and barbers. The instruction given in these schools corresponds pretty closely with that given in a large class of so-called technical schools in England. The number of scholars in the artisan school was 1,630, of whom 1,575 were obligatory students; the number in the girls' school was eighty-five. Fees in the artisan school are 3s. entrance, 8s. a year for two classes and additional fees for each extra class; in the girls' school the fee for a year's course is 18s. "Secondary" education is provided for by a *Real-gymnasium* (semi-classical) and a *Real-schule* (modern).

Then we come to the higher technical and technological education. This includes a textile school (*Höhere Webschule*) for superior students of textile processes, chiefly in

weaving, designing and dyeing. It corresponds with those, already mentioned, at Crefeld, Barmen, Aachen and München-Gladbach, and has a very complete practical installation. The number of day students is about sixty. The fee is £13 10s. per annum for Germans and £30 for foreigners. There are also evening classes in technical draughtsmanship for foremen; the fee is 10s. a year for two hours weekly. In addition there is a very large technological institute of a somewhat special character. It is called *Königliche Gewerbe Akademie und technische Staatslehranstalten*, that is, Royal Trade Academy and State Technical Institutes. The Academy and the Institutes are separate and have different functions, though they are lodged in the same building. The Academy is of the nature of a technical high school or science university; it gives advanced instruction in engineering, architecture and chemistry to young men of superior education, and grants degrees. The course is three and a half years and the fees are £6 per annum for Germans and £16 for foreigners: the number of pupils in 1900 was 404. The Institutes consist of a number of trade schools (*Fach-schulen*), in which theoretical instruction of a lower grade is given in building, engineering, milling, dyeing, and other trades. Conditions of admission are the certificate of a *Volks-schule* and some years of apprenticeship to a trade. The classes are both day and evening. In 1900 the number of pupils was 627, of whom fifty attended the evening classes. The fees range from 10s. to 30s. the half-yearly term.

I have given these details because, of all my selected industrial towns in the three countries, Chemnitz has the most complete educational outfit.

The population of Saxony is overwhelmingly Protestant.

The Roman Catholics only amount to 4·7 per cent., though they have greatly increased in recent years, having nearly trebled since 1880. The number of Jews is very small. As is everywhere the case in Germany, illegitimate births and suicides are more numerous than in the Roman Catholic districts. The following figures show this:—

	Illegitimate Births per 100 (1900).	Suicides per 100,000 Inhabitants (1898-1900).
Saxony	12·6	30
Rhineland	4·0	11
Westphalia	2·7	10
German Empire	8·7	20

To prevent erroneous conclusions from being drawn concerning the influence of work and wages on illegitimacy and suicide it should be added that both are lower in the purely industrial towns of Chemnitz and Zwickau than in Dresden and Leipzig.

Saxony returns twenty-three members to the Reichstag. In 1898 eleven were Social Democrats; in 1903 the eleven became twenty-two. Berlin itself is not more solid.

Vital Statistics of Saxon Towns, 1901.

	Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under One Year per 1,000 Births.
Leipzig	462,675	33·0	18·6	14·4	236
Dresden	404,773	32·2	17·8	14·4	190
Chemnitz	210,004	39·5	23·8	15·7	331
Plauen	75,605	39·6	17·5	22·1	198
Zwickau	56,465	34·4	22·5	11·9	271
Löbtau	35,522	44·8	19·6	25·2	280
Meissen	31,976	31·9	19·3	12·6	225
Zittau	31,247	25·5	17·4	8·1	196
Freiberg	30,279	26·6	19·3	7·3	220
Bautzen	26,297	26·9	16·2	10·7	158
Glauchau	25,766	30·1	22·9	7·2	333
Reichenbach	24,509	37·7	23·3	14·4	333
Meerane	23,941	39·1	23·9	15·2	306

The most striking thing in these columns is the enormously high infantile death-rate, particularly in the textile towns. The low birth-rate in three of the towns is probably due to some peculiarity in the constitution of the population, caused by the presence of some large institution containing unmarried or old people, such as barracks or an asylum. In small towns these are a seriously disturbing factor which must be taken into account both for birth-rates and death-rates; but, of course, they have no bearing on the infantile mortality reckoned in relation to the births.

NOTE.—I have omitted statistics of the number of persons employed in particular industries in the German towns, such as I give for the English and American ones, because the date of the last German occupational census (1895) is so much earlier than the dates of the others that the figures, if used for comparison, would be somewhat misleading.

CHAPTER IV.

INDUSTRIAL DISTRICTS IN AMERICA.[1]

MANUFACTURES are very widely distributed in the United States and the distribution is constantly becoming wider. In 1850 the New England States (Massachusetts, Rhode Island, Connecticut, New Hampshire, Maine and Vermont) represented 27·8 per cent., and the Middle States (chiefly New York, New Jersey and Pennsylvania) 46·4 per cent. of the total products. Together these two eastern groups or areas contained three-fourths of the industrial strength of the Republic. In 1900 the share of the New England States had sunk to 14·4 per cent., and that of the Middle States to 38·9 per cent.; together they represented little more than half the total. This change is not due to any decline on their part, but to the development of other areas —to wit, the Central States (chiefly Ohio, Indiana, Illinois and Missouri) from 14·3 per cent. to 30·7 per cent., and the Western States (the Rocky Mountains group) from 0·1 per cent. to 4·3 per cent. There has also been a marked industrial expansion during the last thirty years in the Southern States and those on the Pacific seaboard, but neither group has yet quite regained the relative position which it held in 1860 previous to the war. The general movement is westward; and its strength may be

[1] The word "town" is used in this chapter and throughout the book in the English sense. In the United States it has a different meaning; the equivalent American term is "city".

gauged by the fact that even the Central States, which are the seat of the most active increase and are often spoken of as "the real America," lost ground relatively between 1890 and 1900. Their products fell from 31·4 to 30·7 per cent. of the whole. The centre of manufactures has shifted steadily from East to West with the centre of population, which in 1790 stood in Baltimore, and in 1900 in the middle of Indiana. Similarly the centre of manufactures, which in 1850 stood somewhere about the middle of Pennsylvania, had by 1900 shifted west of Pittsburg into Ohio.

It is necessary to bear this movement in mind in order to grasp the course of industrial development in the States. But for the study of industrial conditions in the actual present, the Eastern States are still the most instructive ground. Both relatively and absolutely the largest and most important units are on this side. New York and Pennsylvania still head the list as absolutely the largest producers, while Rhode Island, Connecticut, Massachusetts and New Jersey come first as producers *per capita* of the population. They must therefore be reckoned the most purely industrial of the States. Illinois comes third absolutely, but only eighth relatively to the population. It is, therefore, in a comparatively small area in the North-east that we find conditions most nearly comparable with those in the industrial districts of Europe. No doubt the chief reason for this concentration is mere priority in time; manufactures were first started in this area, because it was settled and developed earlier than the inland country to the West. This was due to its position at or near the Atlantic sea-board; and for the same reason it absorbed the bulk of the European immigrants until the opening up of the interior. After that other natural advantages began to tell, as we see from the striking case

of Illinois. In 1840 it ranked sixteenth, in 1860 it had sprung to the eighth and in 1890 to the third place.

In considering the chief seats of manufacture in England and Germany we have seen that most of them have an industrial history going back for several centuries, that their position has been determined by the possession of certain natural advantages, and that to this must be added the traditional skill of the native population, which tends to keep an industry in a locality where it has once been firmly established, although its nature may undergo considerable changes, incident upon new inventions, new materials and new fashions. These observations cannot be applied to America without a good deal of modification. Although it appears from Hamilton's famous *Report on Manufactures* in 1791 that numerous industries were carried on at that time, and although there is evidence that they increased in the early part of the nineteenth century, nevertheless the occupation of the people remained chiefly agricultural, and their wants were supplied to a very great extent by goods imported from Europe and paid for by agricultural produce. Consequently the traditional skill perforce acquired by older countries through the necessity of providing for their own wants in more primitive times has never existed in America on any considerable scale. The people have always been able to get what they lacked from Europe. This entailed the disadvantage of not possessing a stock of industrial skill commensurate with the population, but that was also gradually remedied in the simplest way; the skill was imported too, and the importation is still going on. It was not a complete remedy, but it served; and in the present day the wide-spread changes in processes of manufacture render skill less and less necessary in many branches of industry. These changes have been chiefly effected in recent

years by American inventiveness, and necessity has been the stimulus. They are all of a labour-saving nature, because labour was the thing most lacking. One result is the evolution of a distinctively American style or quality in manufactures, but that is not the point I wish to notice here. The absence of traditional skill, more or less confined to particular localities, has had the advantage of giving greater freedom of movement to manufacturing enterprise and enabling it to go where other conditions were most favourable to its development. Hence the spreading movement noted above. It has had the further advantage of relieving manufactures of the drag of conservatism in method.

The last is one of the advantages enumerated in the United States Census as accounting for the rapid rise of the States to the first position among manufacturing nations.[1] The following five causes are laid down :—

(1) Agricultural resources.

(2) Mineral resources.

(3) Highly developed transportation facilities.

(4) Freedom of trade between States and territories.

(5) Freedom from inherited and over-conservative ideas.

The agricultural resources include both food supplies and raw materials for manufactures. Both, says the Census are cheaper, more abundant and more varied than in any other manufacturing country, adding that " in many localities the character of the manufactures has been determined largely by climatic conditions and by the character of products to which the soil of such localities is especially adapted ". The development of cotton manufacture in the

[1] This claim is based on Mulhall's estimates of the yearly value of manufactured products in the chief industrial countries, *Twelfth Census, U.S.A.*, vol. vii. p. 55.

Southern States is a salient example. With regard to minerals, the compilers have no difficulty in showing that more coal, iron ore and copper ore is mined in the States than in any other country. The local distribution of coal and iron accounts for the shifting of the iron and steel centres from Eastern Pennsylvania to Western Pennsylvania, Ohio and still further West. Of the transportation facilities the most remarkable is the inland navigation, and notably the chain of great lakes, which are unique. They provide a waterway 1,000 miles in length from Rochester to Duluth; in 1899 the ton mileage on this route was equal to two-fifths of the whole of the railway systems. Its influence is seen in the fact that the first, second, third, fifth, eighth, ninth and tenth manufacturing States—namely, New York, Pennsylvania, Illinois, Ohio, Indiana, Wisconsin and Michigan, forming a great industrial belt only equalled by the belt along the north-east Atlantic coast—all lie upon this waterway. In addition there are over 18,000 miles of navigable rivers. The railroad mileage exceeds that of the whole of Europe, and "the transportation of freight by rail is cheaper than in any other country". Finally, freedom of inter-State trade assures a larger free market than is enjoyed by any other trading industrial country; and absence of tradition, already mentioned, permits the free play of novelty and enterprise.

These statements are open to some criticism, but it is not my purpose to criticise them here. I give them as the authoritative utterance of the United States Government on the industrial position of the country, and as the best informed explanation of some of its features. But I cannot refrain, in passing, from dropping the query: Why, with all these superior advantages, is it necessary to place, not merely a prohibitive tax, but any tax at all upon the

products of other countries in order to prevent them from competing successfully with home products? This is not a gibe or a challenge to the discussion of tariffs, but a very sober question which an international comparison of industrial conditions cannot ignore. As several English manufacturers have said to me, "If the Americans are so superior, why is it necessary for them to put on a tariff of 100 per cent. in order to keep me out? I can, and did, beat their heads off against a 50 per cent. tariff; against one of 100 or 120 per cent. I cannot compete; but what I want to know is: Where does the superiority come in?" I have repeatedly asked this question in the United States and could get no answer. There is no valid answer. And the difficulty of finding one is enhanced by the recital of the natural advantages of the United States quoted above.

Massachusetts.

I have said that certain of the New England States furnish the most purely industrial areas in America. They stand first both in the proportion of wage-earners employed in manufactures to the total population, and in the value of products *per capita*. Of these States Massachusetts is the largest and most important. Rhode Island and Connecticut, though surpassing it in these respects and therefore relatively first, are actually so small that they only occupy the fifteenth and eleventh places respectively in the list of States arranged according to absolute industrial capacity or occupation, whereas Massachusetts is fourth, being only surpassed by New York, Pennsylvania and Illinois. Massachusetts has another claim to distinction in being the earliest developed of manufacturing States; in 1810 it stood first, and down to 1850 it was only second to New York. The promotion of home industries

in this State appears to have been pursued with energy from an early period before the Declaration of Independence. In 1767 a resolution was passed at Boston forbidding the purchase from abroad of a number of articles, including various textiles; and in 1780 an association was formed at Worcester for making cloth. Checked by the law forbidding the export of machinery from England, Massachusetts was stimulated to further exertions, and in 1786 gave a grant to Thomas Somers and Robert and Alexander Barr—the first an Englishman, the two latter Scotchmen—to enable them to make and erect cotton spinning machinery. The first cotton mill built in America was put up at Beverly in Massachusetts in 1788; but, so far as I can ascertain, the first to be set to work was at Pawtucket, Rhode Island, in 1790. Progress was very slow at first, and by 1808 only fifteen mills had been erected; but the leading position in the manufacture of cotton and of cotton machinery thus early secured by these States has been maintained ever since. A marked impetus to both was given by the construction in 1814 of a power loom by F. C. Lowell, of Boston, who had studied the mechanism in Britain very much as Fulton did in the case of the steam-boat. Again, in the manufacture of woollen goods, which goes back to a much earlier date than that of cotton, Massachusetts was first in time and is still first in position; and the same may be said of worsteds, which came much later. But perhaps a still more striking instance of early prominence successfully maintained is furnished by the boot and shoe trade. It has been traced back to 1635, when two shoemakers settled in Lynn. That town is still the second greatest centre of the industry and is only surpassed by Brockton, another Massachusetts town. No branch of manufac-

ture has been so completely Americanised or modified by American methods as this; in none has a greater revolution in cheap and rapid production by characteristically American labour saving machinery been effected. And the scene has been Massachusetts. In 1818 pegs were invented as a substitute for sewing; in 1851 machinery was applied to pegging and afterwards to other processes, culminating in the sole-sewing machine, which was perfected in 1861. Hardware and paper are other leading products, the manufacture of which goes back to an early date.

In the retention of its old industries New England illustrates their tendency to stick to a locality in which they have once been firmly implanted and provides an exception to the mobile distribution generally observed in America. The only natural advantage enjoyed by these States in addition to proximity to the Atlantic sea-board, is water-power, which undoubtedly determined the position of some of the leading industrial towns. Lowell, Lawrence and Fall River, in Massachusetts are prominent instances. These are all textile towns and of a purely industrial character, and I propose to take them as examples for comparison with those elsewhere. But a few industrial statistics for the whole State and some observations on the capital will fitly come first.

The population of Massachusetts in 1900 was 2,805,346, and of this number 497,448, or 17·7 per cent., were "wage-earners engaged in manufactures". The term includes some hand trades, Government establishments and small workshops. If these be excluded the number of wage-earners in manufactures was about 445,000. One-third of the total is engaged in textiles, which form by far the largest branch of manufactures in the State; and of the textiles

cotton comes first with upwards of 90,000 persons employed, wool and worsted second with 36,000, hosiery third with less than 7,000. Next to cotton, however, the industry employing the largest number of hands is the manufacture of boots and shoes, in which upwards of 58,000 persons were engaged in 1900; but these figures represent a considerable fall in numbers since 1890, when over 67,000 persons were engaged in the trade. As is always the case in an expanding textile district, machinery is a prominent and growing branch of manufacture. In 1900 it employed over 32,000 men, representing an increase of some 35 per cent. over 1890. The rest of the industrial population is pretty equally distributed over a number of manufactures. The density of population is almost identical with that of England. There are no coal mines in the State, but a good deal of water-power is obtained from the Connecticut, Merrimac and other rivers. The early development of the textile industries was largely due to this natural advantage, which was utilised in several places by means of an extensive system of canals and dams erected at great cost and still maintained, though the increasing use of coal and steam-power has rendered it less important than formerly. Of the total horse-power used in manufactures, between one-fourth and one-fifth is obtained from water.

Boston.

A very striking fact about this great manufacturing State is that not only coal but nearly all raw materials have to be brought from a distance. The maintenance of the local industries, therefore, has necessitated the development of transport facilities to keep pace with requirements. Hence the importance of Boston, which is the centre of the traffic by sea and land not only for Massachusetts but for

neighbouring New England States. A very erroneous impression about Boston has become current in Europe, chiefly through the ironical jests hurled at the "hub of the universe" by Americans themselves. It is represented as being wrapped in a mantle of intellectual superiority and removed from the bustle of the business world—a sort of Oxford, in short. There is a certain amount of truth in the picture, but not very much. Boston is not so exclusively given up to business as most of the large American towns; intellectual pursuits are more prominent and more prized there than elsewhere, though they are not absent from New York and Philadelphia, for instance. It has a tradition of refinement and culture—somewhat self-conscious perhaps—not found elsewhere and largely due to the presence of Harvard University which is socially, though not politically, in Boston. But for all that it is, first and foremost, a great trading place. It resembles Manchester much more nearly than Oxford. Boston is, in fact, to New England what Liverpool and Manchester together are to Lancashire. It is the chief port, the great railway centre and the market in one. The heads of manufacturing businesses in Massachusetts are not at the mills in Lowell or Lawrence or Fall River, but at the offices in Boston. It is a busy bustling town. The heart of it, which lies in a rounded peninsula projecting into the harbour, is fully as busy and bustling as any part of New York, Chicago or Philadelphia. The streets are not less thronged, the heavy traffic quite as conspicuous, the electric cars equally crowded, numerous and fast. And a proof of the predominant character of Boston is the fact that the most noteworthy building in the place is not the public library, nor Trinity Church, nor the Technological Institute, though these are noteworthy; nor is it the State House, which is not; nor even Harvard

University; but the great railway station, which is said, and so far as I know with truth, to be the largest in the world. It has not the architectural merit and dignity of the newer railway stations in Germany, such as those at Cologne and Dresden, but it is immense. I believe it is fitted with a vast number of ingenious devices for facilitating the train service, but its size makes it inconvenient to passengers. This colossal structure is the terminus for the lines running south and west. There is another very large station for other lines and several smaller ones; in short, Boston is the central point or ganglion of a great plexus of railways, which converge upon the port and proclaim it the business heart of New England.

In point of situation Boston resembles New York in that its centre is compressed into a narrow peninsula, from which expansion has only been possible in most directions by crossing the water which almost encompasses it. This old part of Boston bears more resemblance to an old European town than any other in the States. It is very congested, the streets are for the most part narrow and extremely irregular, running in all directions. For all that the thronged traffic and bustle, the big warehouses and fine shops give a great impression of power and wealth. Slums, of course, go with this character; there are many dark and sinister-looking spots in which signs of the seamy side of life abound. But that is not the mark of Boston; it has nothing like the proportion of squalor to be seen in English towns of equal size and similar character. On the other hand, the presence of a large and wealthy residential population is abundantly evident. Without any pretensions to beauty or harmony—things unknown to American street architecture—the best residential streets are good and pleasant to look upon. They have an air of self-respect,

if not of distinction, and are free from that shabby and unkempt appearance which is the hall-mark of American towns and not less characteristic than a mean and dingy appearance is of English ones. With the exception of Philadelphia and Washington, which is an exotic and only American in the shabbiness of its fringe, Boston is the most finished of American cities. The streets are for the most part well paved and well kept, in striking contrast with those of New York. Churches and buildings devoted to literature, science and art are numerous. The public library is the finest I have seen in any provincial town. It is the largest in the United States next to the Congress Library at Washington, and as a building possesses undeniable distinction. Unlike most of the American public libraries it has a newspaper room, and the mechanical system of supplying readers with books is characteristically ingenious. The Institute of Technology also is worthy of the capital of a great manufacturing state. It is the oldest and most famous establishment devoted to technical education in America, apart from agriculture, and has been compared with the Technical High School at Charlottenburg, not very happily. The great Berlin University of industrial science is materially a far more imposing affair and educationally its functions differ. The Boston Institute covers a much wider field, including languages, history, economics, geology, biology and other things that have nothing to do with industrial science; the Berlin courses are more highly specialised and scientifically more advanced. The Massachusetts school bears more affinity to some of the minor German high schools or the new technical school at Manchester, which has indeed been to a large extent modelled upon it. These points, however, would be more properly discussed in connection with education than in the present section.

The number of students engaged in various branches of engineering in 1900-01 was 294.

I have perhaps said enough to give some idea of the commercial centre of the New England States. On the whole a fine town, not equal to Hamburg, which it closely resembles in size, situation and character, but superior to Liverpool, Manchester or Glasgow, over which it has the great advantage, common to all American towns on the eastern side of the Allegheny coal-fields, of a smokeless atmosphere due to the use of anthracite coal. It ranks fifth among American cities. The population in 1900 was 560,892, of which 35·1 per cent. were foreign born and 2·1 per cent. negro. As regards the principal countries of origin the foreign born population was thus distributed in thousands (round numbers): Irish, 70; Canadians, 50; other British, 18; Russians, 15; Italians, 14; Germans, 10½; Scandinavians, 7; Poles, 4. The death-rate (1900) was returned at 20·1 per 1,000, and since registration is very fairly complete the figure may be accepted. Boston is not a manufacturing town. There are some foundries and engineering shops, as there must be in a great port, and all the usual handicrafts, but no industries on a large scale. Though a comparatively old town for America Boston has only been a municipality for about eighty years, having been incorporated in 1822, when the population was 45,000; but the first church was built by settlers in 1632. The place is still growing rapidly; the increase of population in the last decade was over 25 per cent.

The Cotton Towns.

In spite of the rapid growth of the cotton manufacturing industry in the South, Massachusetts is still by far the greatest of the cotton States. In 1900 the total number of

spindles in the United States was 19,000,000 and of looms 450,000. They are very widely distributed, but Massachusetts owns upwards of $7\frac{3}{4}$ millions of the one and 176,000 of the other. No other State had a fourth of the number. The first three cotton towns of America are all in Massachusetts; they are Fall River, Lowell and New Bedford. These are all purely industrial towns and may fairly be compared with Bolton, Oldham and Blackburn. The difference, however, is very great. Massachusetts bears no external resemblance to Lancashire. The latter is stern and hard, grimy with coal and iron; the mill towns stretch out from Manchester in continuous lines; chimneys, coal-shafts and heaps of refuse dot the way; the very sight of it seems to bring the clang of hammers and the whirr of machinery to the ear. Massachusetts is rural, pleasant, rather pretty and tame; the factory towns are dotted about with miles of peaceful country between; when you come up to them they are quiet; there are no coal-pits, no big ironworks, and there is no grime. The chief reason for this difference is the absence of coal and of smoke; but in addition the New England cotton towns are very considerably smaller and younger than their Lancashire rivals. They also differ greatly in many other respects. They represent a certain type which does not exist in England; it stands half-way between the primitive and the advanced American type. The primitive type consists of detached wooden buildings erected along roads which run for the most part at right angles and are bordered by trees. There is abundant space, and only in the centre of the place do the buildings form a continuous street. Here they begin to change from wood to masonry. As the place grows in population and wealth this change extends until eventually the complete city is evolved with permanent buildings and regular streets, only

differing from the European type in the geometrical arrangement and the architectural anarchy which permits a building of twenty stories to be placed alongside one of two. The material is brick or stone as elsewhere, at least externally, for the most modern buildings are constructed of steel and concrete with merely a facing of stone. They are built up from the inside without scaffolding, which permits of their being raised to an indefinite height. Hence the characteristic "sky-scrapers". We hear so much of them and of the marble palaces built by millionaires that an erroneous impression is formed of American towns. The sky-scrapers are not numerous; there are less than a score in New York, and not nearly so many anywhere else; only two or three in Philadelphia and Pittsburg, none at all in Boston or Washington and other important places; and they are mainly used for offices. The really characteristic feature of American towns is still the wooden house. Even in great cities it is found on the outskirts, and elsewhere it is all-prevalent. It is to the sky-scraper and the marble palace what the tramp is to the colossal liner. The latter takes the eye and causes a great deal of talk, but the former carries the commerce of the world. The towns we are considering come half-way in the evolutionary scale; their main thoroughfares are formed of continuous buildings constructed of masonry, but outside these a large part of the population is still housed in wood. Such houses are not cottages, and as a rule it can hardly be said that the urban American's house is his castle. More often than not he has not got it to himself. Flat life is not so universal as in German towns, and streets of small single houses adapted to working class families are not unknown; I shall have to mention them in speaking of Philadelphia. But large industrial towns of the English type, consisting entirely of

workmen's cottages, do not exist. In general the houses are of considerable size and occupied by several families, and as single men are relatively very numerous boarding is common.

Fall River.

These remarks are well illustrated by Fall River, the largest of American cotton towns. The localisation of the industry here is no doubt due to the presence of water-power and of a harbour. Fall River lies on the coast of Massachusetts some forty miles to the south of Boston. It is one of a group of manufacturing towns which make this corner of New England an industrial district second to none in the States. Hard by are New Bedford, Providence, Taunton, Brockton, and other smaller places. Research has failed to elicit any historical details of interest. The manufacture of cotton in America is hardly a century old, and the entire history of many seats of the industry falls well within that period. A company bearing the name of Fall River was formed in 1820 for making cotton cloth, but probably the place was used as a port before the industrial era. It is still an important terminus for the popular sea-route from New York to Boston, which carries an immense passenger traffic and is greatly preferred to the railway in the warmer months of the year. But it is only used by travellers as a changing station. The huge paddle-boats, which carry pretty nearly 1,000 people, leaving New York the evening before, arrive early in the morning, and before breakfast all the passengers have vanished. No one stops; there is nothing to see except the mills. The town, which has a population of 104,863 (1900), lies irregularly extended on high ground overlooking the harbour and the mills, which are grouped about

it down below. A straggling, untidy place, it is no whit more attractive than any of the Lancashire towns. If on the one hand it has a less dingy, brighter and more cheerful aspect, on the other the ragged, shambling streets, ill laid and ill kept, the profusion of shabby buildings and the entire absence of dignity fully neutralise that advantage. Yet there are some good and substantial buildings, both public and private. The mills are the most noteworthy and well worth attention. There are about eighty of them and they represent upwards of 3,000,000 spindles and 79,000 looms. Two of the mills spin only, six are printing and bleaching works, the rest both spin and weave, as is usual in America. Their most striking feature is the great size of the larger concerns. The Fall River Ironworks Company, which is the largest, has 380,000 spindles and nearly 11,000 looms, not all, of course, under one roof; the Durfee mills have 134,000 spindles and 3,500 looms; and the Merchants Manufacturing Company is not far behind with 131,000 spindles and 3,250 looms. This will show the scale on which these concerns operate. Confining themselves as they do to comparatively few classes of goods, they are able to produce large quantities at an advantage. The Ironworks mills, for instance, only spin low counts—18's and 36's—and make one kind of print cloth; and they have their own bleaching and printing works. But there is a tendency to advance from lower to higher grades, probably caused by the competition of the Southern States, and some mills are said to spin up to 150 counts. The larger ones are very fine, built of stone, and the rooms are light and airy. In the Ironworks spinning rooms I saw a quantity of new machinery, all from Platts, of Oldham; the looms were American. The more skilled hands are chiefly British, the less skilled of various nationalities but

principally French-Canadians, who form by far the largest section of the foreign-born population. The total number of hands employed in 1900 was 27,603, of whom 13,568 were men, 12,366 women, and 1,669 children under sixteen. The men are fairly well organised, the mule-spinners in particular. In fact they are as highly organised as in Lancashire, which is not surprising as most of them come from there. From 85 to 90 per cent. of the mule-spinners throughout New England belong to the union, and Fall River is their headquarters. There every man belongs. They have fixed price-lists, arranged with the owners, as in England, and a certain machinery for settling disputes though less complete than in Lancashire. The trade union secretary is generally able to settle an incipient dispute direct with the individual owners, who are very accessible. Changes in the price-list are settled by a joint conference. The average earnings of mule spinners are £2 18s. a week, and the highest £4. The week is fifty-eight hours. Card-room hands earn from 43s. to 50s. a week. Considering the longer hours, higher rents and greater cost of living, the advantage over Lancashire is not great; and the verdict of a leading trade unionist who knew both countries, was: "A competent man had better stop at home."[1] Housing varies. Wooden tenement houses, such as I have mentioned above, are numerous. They are large houses of three or four floors and they accommodate from four to six families as a rule. Rents run from 2s. to 3s. a week for a room. A tenement of four rooms and a kitchen costs from 10s. to 12s. a week. But there are also smaller houses, and a good many operatives own, or nominally own, their houses through the assistance of building societies. In 1900 there

[1] In January, 1905, the operatives accepted a reduction of 12½ per cent. after a strike lasting six months.

were 21,027 families living in 9,509 dwellings and an average of eleven persons to each dwelling. One great advantage these medium towns possess over the larger American cities and the older English towns is the absence of congestion and of slums. There is ample room and the buildings are spread out over plenty of ground. The absence of squalid dwellings unfit for habitation is noticeable. On the other hand the parks and playgrounds are distinctly inferior to those in most industrial towns in England; but this must be attributed largely to climate; there is not the same verdure in America. Sanitation in general is inferior, and typhoid fever in particular is excessively prevalent. Perhaps it would be more correct to say has been excessively prevalent, because a marked improvement in several towns has been effected in recent years mainly through attention to the water supplies, which are generally very inferior in the United States. The quantity is often unlimited, but at the sacrifice of quality. Good quality is very rarely compatible with unlimited quantity because pure water costs money, and those who point to the enormous domestic consumption of water in the United States omit to mention the equally enormous prevalence of water-borne disease.

I shall have more to say on this head in speaking of the town of Lowell, but I may mention here another cause of typhoid fever—namely, the consumption of oysters from contaminated layings. Oysters are very cheap in America and everybody eats them; to many they are a daily article of diet. Probably the bulk of them are harmless, but the public is deceived in thinking that they are all so. This is a common delusion. American friends have said to me: "At any rate our oysters are safe; there is no fear of getting typhoid fever from them, as in England". As a matter of fact it was in the State of Connecticut that

oyster-borne typhoid was first conclusively demonstrated in the year 1894, and there is far more contamination of oyster beds along the coast of New England than of England; but the subject has not been so much investigated and talked about. Professor Sedgwick, of the Massachusetts Institute of Technology, speaking of oyster-borne typhoid, says:—

"No extensive investigation of this subject has as yet been made in the United States, but there is good reason to suspect that if such examination should be made, it would reveal, in many cases, the existence of insanitary conditions in connection with the oyster industry."[1]

I can bear that out from my own observation for I have seen oysters and other shell fish being dredged up in one of the harbours along this coast, into which open sewers were discharging at no great distance. The whole question is interesting as an illustration of the ill-founded complacency which is so common in the States.

Another preventable disease excessively prevalent is diphtheria. In consequence of the great differences in age constitution of the population, due to the large proportion of young adult immigrants in American towns, a comparison of the death-rates in them and in corresponding English ones ought always to be used with a certain reservation as the measure of relative healthiness, even if the American vital statistics were equally complete, which is not the case. But taking them as they stand they show that there is something wrong with these New England cotton towns. Fall River, for instance, ought to have a very low death-rate, certainly not more than 15 per 1,000. It has many advantages. The situation is particularly good.

[1] *Principles of Sanitary Science and Public Health*, by William T. Sedgwick, Ph.D., 1902, p. 308.

High ground and a rocky formation, with a good fall to carry off rain or sewage, and consequently dry soil, abundant space, air and sunlight are the very conditions that conduce most to health. Add to them absence of old slums and rookeries and a population containing an abnormal proportion in the prime of life, working moderate hours and in receipt of high wages (in Fall River municipal labourers get 8s. a day for eight hours' work). Here are something like model conditions; yet the death-rate was over 20 per 1,000 in 1901, and that was lower than in previous years. In the same year the death-rates in Bolton, Oldham and Blackburn were 18·2, 19·6 and 19·5 respectively. And Fall River does not stand alone; the rates in Lowell and New Bedford were equally high or higher. The sanitary data published with regard to these towns are too incomplete to enable one to trace their unhealthiness to its proper causes, but my belief is that it is mainly due to antiquated and inefficient sanitation in general, bad water supply and defective means of dealing with infectious diseases. The chief causes of death in Fall River in 1901 were diarrhœa and enteritis, consumption, pneumonia and bronchitis. It must not be inferred that the New England towns compare unfavourably with others in America. On the contrary, so far as can be judged from the very inadequate information available, the mortality is equally high or higher in other industrial centres. But registration is carried out in such an imperfect manner that the subject cannot be handled with any confidence.

Of the population of Fall River nearly one-half is foreign-born (50,042 out of 104,458). The principal countries of origin are Canada (22,500), Great Britain (13,400), Ireland (7,300) and Russia (1,000). The Canadians are chiefly French from the province of Quebec; they come

for employment in the cotton mills and are unskilled. With the Irish they form a large Roman Catholic element in the town. There are sixteen Roman Catholic churches, nine schools and two orphan homes. This illustrates the steadfast policy of the Roman Catholic community in maintaining its religious influence; it has taken the leading part in that development of private schools, which seems to be accompanying the disappearance of religious teaching in the public schools. They educate 70,000 children in the state of Massachusetts, but a large number of the scholars attend the public schools in addition. Of the latter there are at Fall River: primary, thirty-one; intermediate, twenty-seven; mixed, eight; grammar, thirteen; with one high school.

Fall River has a good public library, founded more than forty years ago. In 1901 it contained 61,561 volumes with a home circulation of 158,289, distributed among 11,767 card-holders. The reference library and reading-room, which contains newspapers, are open on most Sundays. The number of readers is not stated in the report, but "the demand for standard reference works" is large. In the circulating library "fiction, of course, still largely predominates, but the demand for the better class of such books increases".

The town has by this time a textile school for teaching the local industry, but at the date of my visit the building, to which the municipality had given £5,000, was unfinished.

Fall River is connected by rail with Providence, New Bedford and Taunton. The facilities for locomotion are very complete, for in addition to the railways, electric road cars run between these towns and there is also an electric railway between Fall River and Providence. The

electric trams in the town are not owned by the municipality, nor does it deal in electric light or gas. Municipal trading is very little developed in America, nor does it appear to be regarded with much favour. Otherwise the functions undertaken by the local public authority are much the same as in England. It has the care of streets, public buildings, parks, cemeteries, public lighting, water supply (usually), sanitation, fire prevention, police administration. With regard to education and pauperism the system varies in different states and towns. At Fall River both the public schools and poor-law relief are administered by the city. The expenditure on the latter in 1901 was £25,736 or about 4s. 9d. per head of the population; but this amount includes expenditure on hospitals, dispensaries and the insane.

Vital Statistics of Fall River, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
107,000	37·8	20·1	17·7	185

The comparatively high birth-rate is due to the large proportion of foreign-born residents, particularly French-Canadians. Out of a total number of 4,054 children born, only 586 were the offspring of wholly native-born parents, whereas 2,712 were the offspring of foreign-born parents and 752 of mixed parentage; 4 were unknown. These facts illustrate the dependence of the New England States on foreign blood for the maintenance of population. The birth-rate for the whole State of Massachusetts in 1901 was 25·07 per 1,000. The infantile mortality is very high at Fall River, higher than in most of the corresponding Lancashire towns.

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
129	104	2,250

Places of Worship.	Theatres.	News-papers.	Public Library.
68	4	7	1

The number of liquor licences is limited by law to 1 in 1,000 of the population. Of the persons arrested for drunkenness 62·18 per cent. were of foreign birth. The theatres include one theatre proper and three music halls, mostly very small. Of the newspapers three are daily and four weekly; two are in French.

Lowell.

Lowell is a nice town and a favourable example of its class. It lies twenty-six miles north of Boston on the banks of the Merrimac, which here reminds one of the river at Ottawa, though the surroundings are less romantic. It is a fine stream rushing in a rocky bed. The head of water furnished by a series of falls at this spot explains the selection of the site for a factory in the early days of the cotton industry. It was in 1823 that Francis Lowell, of Boston, who made the first power-loom in America, came out to the Merrimac to build a mill and so founded the town which bears his name. Such is the origin of many an industrial centre in the United States, and the process is going on to-day. Lowell now has a population of 94,969 (1900), of whom 31,582 are engaged in "manufacturing and mechanical pursuits". That is to say, it is a purely industrial town. The staple manufactures are cotton and hosiery, but there is also a celebrated woollen mill and some machinery works. The number of persons employed in cotton mills in 1900 was 13,742, of whom 6,300 were men, 6,798 women and 644 children

under sixteen. It is therefore a long way behind Fall River, but it ranks as the second cotton town in America. The number employed in hosiery was 4,165; in woollen and worsted goods, 2,496; and in "foundry and machine shop products," 2,938. The proportion of foreign-born inhabitants was 43·1 per cent. Canadians (chiefly French), numbered 19,159; Irish, 12,147; English, 4,446; and next to these the largest contingent of any other nationality was furnished by 1,203 Greeks. There were also in appreciable numbers Swedes, Austrians, Portuguese, Poles and Russians. All these find employment in the mills, and a very mixed company they make. I had an unusual opportunity of reviewing them as they were paraded for a great strike procession. They were marshalled by nationalities with a very curious effect. The different types, cheek by jowl, stood out in vivid contrast —the French, the familiar English, the Celtic, the Scandinavian, the Slav, the small Portuguese and the swarthy Greek. Such a sight can be seen nowhere else. It brought before my eyes in one living picture the amazing cosmopolitanism of American labour, and made me think with a smile of that convenient abstraction but almost mythical person of whom we have heard so much—the "average American workman". In truth the average American workman in the chief industrial States is almost anything you please except American or except a workman, and all the arguments drawn from his supposed education and training are built upon a delusion. The average American workman is really a clerk. The mixture of nationalities enormously complicates the question of organisation and its effects. Very few of the continental Europeans speak English or have experience of trade unions, but they seem to understand a strike well enough. They all turned out on

that occasion to a man, and did their share of parading with enthusiasm. The women were all there too, being chiefly Canadian, Irish and English. It was an interesting occasion.

This strike prevented me from seeing the Lowell cotton mills at work, for every one was closed; but it threw light upon them, notwithstanding, and upon other matters. The cause was the demand, originally on the part of the loom-fixers, for a 10 per cent. rise in wages, based on the ground that they were paid lower rates than elsewhere, and in particular at Fall River. The following rates of wages were given to me by a man who was neither employer nor employed, nor in any way connected with the dispute, but who had an intimate knowledge of the facts. Average weekly earnings: Mule spinners, 50s.; fixers, 48s. to 52s.; weavers, 28s.; card-room hands, 24s.; ring-spinners, 24s.; overseers, £3 12s. to £4 16s.; second hands, £2 8s. to £3 4s. These rates are considerably below those in force at Fall River and New Bedford, and not much higher than in Lancashire. If the difference in hours and cost of living be taken into account, they are lower. The employers refused the rise demanded, the Textile Council took up the cause of the men and all hands came out to the number of some 13,000. The matter was referred to the State Board of Arbitration, and I had the good fortune to be present at one of the hearings. It was an instructive experience. The strikers were represented by counsel. The court first spent an hour over the question of sitting. The men were going to have a procession that day and the leaders wished to be present; they therefore asked for an adjournment. The other side were quite willing to meet them, and eventually, after wasting an hour, the court decided to adjourn from twelve to three for the convenience of the leaders. Their counsel then proceeded with the case, and cross-examined some of the owners.

The plea of the latter was that they could not afford to give the same wages as at Fall River because their plant was antiquated. Counsel for the operatives did not challenge the fact but rather accepted it and put the blame on the employers. He laboured away at an open door with wearisome iteration, and, when the time came to adjourn, had elicited nothing but what was granted at the start. The waste of time and the licence permitted were flagrant. No member of the court uttered a single word; they let him run on. I spoke of the waste of time to an American gentleman, who explained that the court dared not stop him, or they would be accused of partiality. I was painfully impressed by the unreality and weakness of the proceedings. After sitting for a week the arbitrators inspected the mills and reported that with one exception they could not afford to pay the wages demanded. Still the hands remained out; but after two months the mills were re-opened at the old rates, and most of the strikers went back to work. After another three weeks, the strike, which had tasted twelve weeks, was officially declared at an end.

After this it is hardly necessary to say much about the Lowell cotton mills. The elaborate system of canals which was built to supply them with water-power is still maintained, though the cost of maintenance is said to counterbalance the economic advantage over coal, which is also used. In the present day it would be cheaper to use coal than to reconstruct the water system. More noteworthy than the cotton mills is the large carpet-weaving concern, which bears the name of Bigelow. The establishment of this industry in Lowell dates from 1828, when some of the carpet looms made by Erastus Bigelow were set up in one of the cotton mills. Carpet weaving in the United States was first carried on in Philadelphia, which is still by far the greatest centre

of the industry, but the looms of Bigelow brought Massachusetts to the front with the making of ingrain carpets. At present the Bigelow mills employ about 2,000 hands, and make most kinds of carpets from start to finish. They spin and dye the yarn as well as weave. The weavers, male and female, are chiefly British and principally from Kidderminster and Halifax. The female weavers that I saw here were a noticeably fine upstanding set of women; they are employed chiefly on Axminsters; Wilton and ingrain carpets are woven by men. One of these, to whom I spoke, was earning £2 16s. a week. These are good mills but not equal to Crossley's at Halifax; some of the sheds are excessively dark, a very common and a very serious fault in American weaving sheds.

I have called Lowell a nice town. It is well laid out, though irregularly, and the best streets are broad and well paved. The place has a pleasant air. The city hall and library are both good. They are stone buildings of decided architectural merit and superior to anything of the kind I have seen in similar American towns of this size. The library contains 62,618 volumes (1901); the number taken out for home reading was 139,514, and 15,356 were used in the reading-room which is not provided with newspapers. With regard to housing, the bulk of the workpeople live in tenements, but the houses are smaller than those described at Fall River; in 1900 there were 19,279 families living in 13,671 dwellings, the average number of persons to a dwelling was 6·9, and to a family 4·9. At Fall River the corresponding figures were eleven and five. The housing is good and not dear for America. The rent for a tenement consisting of dining-room, kitchen, scullery and four bedrooms is about 15s. a week. In spite of its pleasant look and real advantages Lowell has a death-rate

of 21·45 per 1,000 (1901), and even this comparatively high figure represents a vast improvement on past years. In 1892 the death-rate was 27·67. This was largely due to the prevalence of water-borne disease. The water supply was taken direct from the Merrimac river without purification, and typhoid fever among other intestinal complaints was excessively rife. At Lawrence also, where the same conditions obtained, the same results were observed. The case of these two towns is very interesting. In 1890 the death-rate from typhoid fever was 15·8 per 10,000 at Lowell and 12·3 at Lawrence; in 1900 it had fallen to 1·7 in both towns. The cause in both cases was alteration of the water supply, but whereas at Lowell deep wells were substituted for the river, at Lawrence the same water was used, but after filtration. The average mortality from typhoid fever in those American cities which have registration, was 4·2 per 10,000 for males and 3·0 for females in the same year (1900); in the thirty-three great towns of England it was 1·7, or exactly the same as the improved rate of Lowell and Lawrence. It has since been considerably lower in both countries. In 1902 it fell to 1·1 in Lowell, and the average of the English towns was, curiously enough, also 1·1. From statistics published by the Department of Labour in Washington [1] it appears that the highest mortality from this cause in the English towns is about equal to the average of those in the United States, and that the English average is very little higher than the American lowest. Considering the unsatisfactory condition of several of the large towns in England, a rough estimate can be formed of the sanitary defects prevailing in the United States, particularly in relation to water supply. In Pittsburg the mortality from

[1] *Bulletin*, No. 42, September, 1902.

typhoid fever was 12·4 per 10,000, in Allegheny it was 10·0 and even in Washington it was 6·7. The water supply of Washington is taken direct from the river Potomac which is an opaque, reddish-yellow stream. For drinking it usually undergoes some sort of domestic purification, upon which no reliance can be placed as every sanitarian knows; for other purposes it is used as it comes from the river. I never, on any occasion, could see the bottom of my bath, which reminded me of the only other experience I have had of washing in equally dirty water. That was at Hamburg in 1892, at the time of the great cholera visitation, and before the water was filtered. The extreme nervousness shown at the time on the arrival of ships from Hamburg at American ports was explained to me when I saw my bath in Washington. Had cholera obtained a footing in America the people would have died like flies, as they did in Hamburg. To complete this rather long but not irrelevant digression I will add that the average mortality from typhoid fever in fifty-seven large German towns in 1901 was less than 0·8 per 10,000.

An important industrial feature of Lowell is the Textile School, the largest and most complete institution of the kind in the United States. It was opened in 1897 and installed in a new building specially erected for the purpose in 1903. The school was apparently modelled on the German type of higher textile school, and its aims are wholly practical. It is intended for the training of both leaders and operatives in the local industries, for which skilled labour is lacking. It serves the towns of Lowell and Lawrence and the whole industrial district in their vicinity, and consequently it embraces the manufacture of wool and worsted, as well as that of cotton, in all their processes. There are five regular diploma courses for day students, namely: (1) cotton

manufacturing, (2) wool manufacturing, (3) designing, (4) chemistry and dyeing, (5) weaving. Each course is intended to cover three years. These are for students of a superior class, and the fee is £20 a year for residents of Massachusetts, £30 for non-residents. No previous mill experience but evidence of a certain standard of general education is required. For operatives and others engaged at work in the day time there are evening classes. The courses range from one to four years (chemistry and dyeing). The evening classes are free to operatives and other residents of Lowell; otherwise the fees are 10s. a term or £1 a year. An interesting fact about the school is that it is the outcome of the enterprise of local manufacturers, who were the original incorporators. The bye-laws provide that two-thirds of the trustees shall be "persons actually engaged in or connected with textile or kindred manufactures". The buildings and equipment, exclusive of the ground, cost £65,000, to which the State contributed £18,350; the rest was furnished by the local municipalities, manufacturers and others. The school occupies an admirable site overlooking the river and stands apart with ample open ground about it. The building is plain but on so large a scale as to present an imposing appearance. The class-rooms and laboratories are very well appointed and the largest that I have seen in any institution of the kind. It is claimed that the machinery equipment is more varied than in any other textile school either in America or Europe, and so far as my experience goes the claim is justified. No other school attempts to teach all the wool and cotton processes and at the same time contemplates adding silk and other fibres as well. But in my opinion something is lost in concentration by this extension, and the scheme of study seemed to me more ambitious but less close and practical

than in corresponding German and English textile schools. The conditions of real manufacture are not reproduced in the same way as at M. Gladbach or Aachen, for instance; and students having no experience of the mill are likely to be turned out with a good theoretical knowledge but a defective practical grasp of the processes. In the academic year 1902-03 the total number of students was 545, of whom 116 attended the day and 429 the evening classes. Of the day students eighty-two came from a high school or academy, ten from colleges, ten from grammar schools and six from a university; the evening students presented a curiously varied list of occupations. The majority were connected with textile manufactures in some form or other, and included thirty-one weavers, nine spinners, eleven loom fixers, forty-two machinists, two foremen, sixty "operatives," and others; but there were also some 150 persons following totally different occupations: fifty-nine clerks, for instance, eight book-keepers, two druggists and a heterogeneous collection including a baker, tailor, blacksmith, jeweller, teamster, harness-maker and others having no more connection with textile manufactures than with deep-sea fishing. However one may admire the energy of such students in taking advantage of the opportunities afforded for improving their minds, their presence is hardly in keeping with the proper objects of the school or calculated to maintain a high standard of class efficiency.

In addition to the textile school technical education is also served in Lowell by an evening drawing school, established in 1872. It has had a useful influence in fostering the local manufacture of machinery, a comparatively young but growing industry.

With regard to general education, the number of children enrolled in the public schools in 1902 was 12,776, and in

private ones, 4,226. There are eight Roman Catholic schools and one college. Evening schools are a prominent feature ; they are largely attended by young foreigners, who being minors and unable to read and write English are compelled by law to attend school as a condition of employment. In 1902 the number of evening schools was fourteen, the total number of pupils on the books was 3,438, and the average attendance, 1,701.

Like Fall River, Lowell owns its own waterworks but not gas, electric light or tramways. The area of public parks is sixty-eight and a half acres against eighty-nine at Fall River. Neither town has any markets.

Vital Statistics of Lowell, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
94,969	29·4	21·5	7·9	195

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
121	98	4,079

Places of Worship.	Theatres.	News-papers.	Public Library.
58	5	10	1

The number of arrests for drunkenness is enormous and requires some examination. Lowell is one of those places which sways backwards and forwards under local veto between allowing and prohibiting the liquor traffic. Several of its neighbours are in like case. When prohibition is in force in a town there is still a vast amount of public drunkenness, but the law has the effect of driving a certain number of customers to neighbouring places where prohibition is not in force. In 1900 Lowell had prohibition, with the result that the arrests for drunkenness fell from 2,973 to 2,063, which is still very high. This reduction was ob-

tained at the expense of Lawrence and other neighbouring places, which had their charge sheet correspondingly increased. Lowell then reverted to licences, got back its full share of the drunkards and, in the reaction, something more. The report of the Board of Police contains some very pertinent remarks on the results of local veto.

Other Massachusetts Towns.

The two cities described may be taken as types of the Massachusetts industrial centres. The others strongly resemble one or other of them in all essential features. A few notes, therefore, on some of the more salient points bearing upon industrial conditions will suffice.

Lawrence might be called a small and less finished edition of Lowell. It lies on the Merrimac and derives a large part of its mill power from the river by means of a great dam which gives a fall of twenty-eight feet. Of 4,400 horse-power employed in one of the large mills, 1,800 is obtained from water and 2,600 from steam. The population in 1900 was 62,559, and 45·7 per cent. were foreign-born. Lawrence differs from Fall River and Lowell in having a large German element. The principal industries are worsted and cotton goods; in the former about 11,000 and in the latter about 6,000 persons are employed. Minor industries are machinery, paper and woollen goods, each employing some hundreds. Some of the worsted mills are very large and comparable with those of Bradford. The most famous of them are the Pacific Mills, which employ about 3,000 hands and carry on all the processes of worsted manufacture from start to finish. They contain a great deal of English machinery—combing machines from Leeds, spinning frames from Keighley and looms from Bolton. The goods turned out, however, are not equal to the product of the

great Bradford mills; the labour is less skilled, and there appears to be a less intimate knowledge of the materials and processes and of the most advantageous use of the machinery. In combing and spinning in particular, Bradford is not seriously rivalled by the American mills, nor in the finer grades of finished cloth and dress materials. In lower grades, however, the Lawrence mills are efficient enough, and the tariff secures the home market to them. The public schools number twenty-five, and the Roman Catholic community maintains two.

VITAL STATISTICS OF LAWRENCE, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
65,000	29·1	17·2	11·9	184

MISCELLANEOUS STATISTICS.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
62	62	1,321

Places of Worship.	Theatres.	Newspapers.	Public Library.
35	3	15	1

New Bedford in many respects closely resembles Fall River. It lies on the coast and was formerly a headquarters of the whale fishing, from which it derived much wealth. That industry is a thing of the past, but it has been replaced by a vigorous development of cotton manufactures. New Bedford ranks third among American cotton towns in regard to size and amount of product, but in efficiency it is first. It owns the most modern and advanced mills in the States and turns out the finest work. The population in 1900 was almost precisely the same as that of Lawrence, namely, 62,442, of whom 25,529, or 40 per cent., were foreign-born. This is a smaller proportion than in any of the towns previously mentioned. The reason probably is that New Bedford contains a larger

element of well-to-do residents, left by its old trade, and that the manufactures are of comparatively recent growth. As they develop they will attract more foreign labour and the town will change its character. Thanks to the cotton industry it is growing very rapidly; between 1890 and 1900 the increase of population exceeded 53 per cent. The average number of persons employed in the cotton mills in 1900 was 12,286, of whom 5,000 were women and 887 children under sixteen. The number of establishments was fifteen, from which their size can be gauged. The best mills are very fine, quite up to date in every respect and equal to the best in Lancashire, which has in New Bedford its most formidable rival. The atmosphere favours fine spinning, and in two at least of these mills very high counts are spun, up to 250. The most skilled hands are English, and a great deal of the machinery. In a leading mill I found breaking, carding, combing and spinning machines all from Hetherington's, of Manchester. The spinners are highly organised and have a fixed price-list, mutually agreed to between employers and employed, as at Fall River and in the Lancashire towns. Very high wages can be earned, up to £4 a week. The town possesses a textile school, which was opened in 1899 and is confined to teaching the cotton manufacturing processes, including mill engineering. There are day and evening classes, as at Lowell, and the full courses are very much the same, but the New Bedford school has special short courses of a year intended for superintendents, which I do not see provided for in the prospectus of the Lowell school. The fees are the same. For the rest New Bedford is a pleasant little place and in some respects superior to the sister towns already described. The public library, with 77,000 volumes, is considerably larger. Then it has 255 acres of public parks

against 129 at Lawrence, sixty-eight at Lowell, and eighty-nine at Fall River, though the last two have a much larger population. Similarly in regard to its streets: New Bedford has 136 miles of paved streets against sixty-one at Lawrence, thirty-seven at Lowell and ninety-four at Fall River. It is almost unique among American towns in having no unpaved streets or what we should call unmade roads.

Having mentioned this fact I may take the opportunity of saying that the weakest point in American towns is the streets. They are in general badly laid and worse kept. The material is varied but macadam predominates. Next to macadam granite "setts" are the most common form of paving, but they are generally allowed to get into a very bad state. The same may be said of asphalt, which is a good deal used in the principal thoroughfares. Bricks are still often met with, and if kept in order do not make a bad road. Wood is exceptional, cobble stones are pretty common and pretty bad; roads merely laid with gravel are counted as paved. Perhaps the most striking thing, however, is the large area of streets which are not made at all, but are merely sand or mud. Within the boundaries of New York city there are 762 miles of unmade streets, in Chicago more than two-thirds of the street area is in this condition, and even Washington has seventy-nine miles of unpaved to 241 miles of paved roads. All the main streets of Washington, however, are asphalted and well kept, and on the whole it may be called a well-paved city, though it cannot compare with Berlin. The streets of Boston and Baltimore are also very fair, having a relatively small area unpaved. But taken all round I should say that Philadelphia is the best paved city in the States. It has the largest extent of asphalted pavement, namely, 321

miles, with 360 of granite, 134 of bricks and 226 of macadam; and the streets are kept in very fair order. New York is truly wretched. With the exception of a comparatively small area inhabited by wealthy persons the condition of the streets is astonishingly bad. London has no reason to be proud of its main thoroughfares; however well laid they may be, the enormous horse traffic soon knocks them to pieces and the constant taking up of the roadway for various purposes—a model of mal-administration—gives them no chance. But at their worst they are vastly better than those of New York, where holes more than six inches deep are quite common in the most important thoroughfares. I have seen numerous holes fully a foot deep in Broadway, and it is pitted with lesser ones. This causes less inconvenience than might be supposed, as the profusion of electric trams drives other wheeled traffic off the streets. In fact it is not noticed, for the people of New York seem to take no pride or even interest in the appearance of the streets except where the very wealthy live.

Vital Statistics of New Bedford, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
66,000	37·35	17·20	20·15	149

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
85	58	1,197

Worcester is a more important and more attractive place than any of the manufacturing towns hitherto described. It lives mainly by manufactures, and must therefore be called an industrial centre but, in truth, it is a good deal more. It is the second city in Massachusetts and has something of the capital about it. Founded in 1684 it can boast

of a respectable antiquity, and in the history of American industrial development it occupies an honourable place. The Worcester district is connected with the earliest, or almost the earliest manufacture of cloth, carpets, silk, wire and machinery; but the town has not specialised in any particular direction. It is the seat of a great many miscellaneous industries none of which have developed on a large scale. The leading branches are machinery, in which nearly 5,000 men are employed, wire (about 1,000), woollen goods (855), boots and shoes (803), clothing (817), fire-arms (632). But the interest of Worcester lies less in its manufactures than in its character as the intellectual centre of a manufacturing district. Of this the most prominent sign is the Polytechnic Institute, which resembles and rivals the Institute of Technology in Boston as a college of science. It was founded in 1868 and aims at giving a general scientific education, but special attention is paid to engineering. The number of students in 1902 was 248; nearly 1,000 graduates have obtained academic or industrial situations. There are other signs of intellectual life. The American Antiquarian Society has here its headquarters with a fine library and museum. There is also a Natural History Society with another museum. The public library (135,000 volumes) is far larger than that possessed by any American town of similar size, and higher educational establishments are numerous. Among them are Clark University, a Roman Catholic College, a military academy, the State normal school of Massachusetts and two high schools. Another interesting fact is that Worcester has a newspaper, the *Worcester Spy*, which has been published regularly since 1770. By a singular coincidence Worcester in England boasts the oldest-established English newspaper. The handsome appearance of the town is in keeping with its character. It

is well laid out, and the public buildings and open spaces give it a superior air. There are numerous parks on the outskirts, and beyond them some attractive country. The population in 1900 was 118,421, of whom 37,652 or 31·8 per cent. were foreign-born. This is a much smaller proportion than in the more purely industrial towns. The Irish furnished the largest contingent (11,620), then the Canadians (8,367), and after them the Scandinavians (7,964). The last fact is curious, for Scandinavians chiefly affect the North and West and are most numerous in Minnesota, Wisconsin and Illinois. There are comparatively few in New England, and Worcester forms quite an exception in this respect.

Vital Statistics of Worcester, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
121,064	27·03	16·50	10·53	128

The birth-rate is much lower than in the preceding towns with a larger proportion of foreign-born inhabitants, and the death-rate is also correspondingly lower. The infantile mortality is much less than in the textile towns.

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
136	90	3,524

Providence, Rhode Island.

Rhode Island is the smallest of all the States, but it is the most purely industrial and has the greatest density of population, namely, 407 persons to the square mile. Its neighbour, Massachusetts, comes next, with 348. Its industrial efficiency is proved by the fact that it produces goods to a greater value in proportion to population than any other state; the value *per capita* in 1900 was £86;

Connecticut came next with £78 and Massachusetts third with £74. Pennsylvania, the great iron and steel state, was sixth with £58. The comparison clearly establishes the high productivity of these New England States and of Rhode Island in particular. Industrial activity is more concentrated here than anywhere else. The proportion of wage earners employed in manufactures in 1900 averaged 23·1 per cent. of the total population, or 98,813 out of a population of 428,556 ; but the greatest number so employed at any time during the year was no less than 27·1 per cent. of the population. This industrial activity, which is keeping pace with the general advance under modern conditions, is the more remarkable because Rhode Island possesses no natural advantages. It has a small amount of water-power, but is more dependent on coal than either Massachusetts or Connecticut. Like them, too, it has to obtain coal and all raw materials from a distance, but without enjoying their transport facilities. It has practically only one line of railway and no real port. Providence, the capital, lies on an ocean harbour and has some traffic by sea, but for lack of water and docks the amount is insignificant. The flourishing condition of the manufactures, therefore, must be attributed to early establishment, energy and enterprise, and a handy supply of imported labour. Only one State has a larger proportion of foreign-born white inhabitants and that is North Dakota, one of the sparsely populated farming States of the north-west, to which foreign agricultural settlers go in large numbers. The wholly native population of Rhode Island (that is, the population having native-born parents, who are themselves, however, mainly the offspring of foreign parents) is only 153,413, which is less than the population of Providence City alone. The

population born wholly of foreign parents is 55·6 per cent. of the whole, and that born of mixed parentage is 8·6 per cent. Rhode Island illustrates in a very striking manner the dependence of American industries upon imported labour. Of the foreign-born population (which is not the same thing as the population born of foreign parents) the largest contingents are supplied (1900) by the Canadians (39,277, mainly French), Irish (35,501), English (22,832), Italians (8,972), Swedes (6,072), Scotch (5,455) and Germans (4,300); there are also considerable numbers of Portuguese and Russians. The leading industries are textiles, which in 1900 employed an average number of 49,760 persons. Cotton heads the list with 24,032; then comes worsted with 14,896; dyeing and finishing, 5,942; woollen, 2,710; hosiery, 1,594. After textiles the largest groups are engineering and machinery, employing 8,799; jewelry and silverware employing 8,702. Both of these are growing very rapidly.

The cotton industry dates from 1790, when it was started at Pawtucket, and since that time Rhode Island has maintained its position as the second cotton manufacturing State, being only surpassed by Massachusetts. The number of spindles at work in 1900 was 1,920,522, and of looms, 42,298. A special feature of the industry is the manufacture of small cotton goods, particularly tape, webbing, wadding and sewing cotton. In this branch, which is not much developed in the United States, Rhode Island stands easily first. In worsteds also it is only surpassed by Massachusetts. In both States the same change, from wool to worsted, is going on rapidly. The number of combing machines at work in Rhode Island in 1900 was 287. The jewelry trade is no doubt largely responsible for the high value of Rhode Island products.

It has been established for more than a century, and it acquired prominence so early as 1794 by the invention of a truly characteristic process of filling in gold with cheaper metals by a man bearing the appropriate name of Dodge. If he is not the father of the word "dodge" he ought to be. In the whole range of American inventions none is more characteristic than this—to make something cheap look like a precious metal. The process was subsequently improved and further cheapened by an English workman from Birmingham in 1846. Silverware is an offshoot of the jewelry trade and equally a speciality of the city of Providence. That town alone manufactures one-fifth of the jewelry and nearly one-half of the silverware produced in the United States. In the production of engines machinery and tools Rhode Island has more formidable competitors, but it possesses several establishments which enjoy the highest reputation for turning out good work. Another branch of manufacture that has been revolutionised of late years by American ingenuity has its seat in Providence and owes its development to that town. It was there that the cutting of files by machinery was first introduced by a local mechanic in 1864. The lead has now been followed in all countries, and it is probable that in a few years no files will be cut by hand. The capacity of Rhode Island to keep in the forefront receives yet another illustration from the modern industry of rubber boots and shoes, in which it ranks third after Massachusetts and Connecticut.

These brief notes will sufficiently vindicate the claim of the little State to exceptional enterprise. If Providence be excluded the manufactures are distributed in a number of small centres. The second town, which is Pawtucket, only has (1900) a population of 39,231; Woonsocket comes third

with 28,204. These are followed by a number of smaller places, which are rather large villages than towns. They lie along the railway and give a semi-rural character to industrial life in this area. The chief manufacturing activity, however, is concentrated in Providence, which accounts for nearly half the wage-earners of the State. It ranks twentieth among the cities of the United States and has (1900) a population of 175,597, out of which about 45,000 are employed in manufactures. I have already mentioned that, though a port, it does not do much business by water. Providence river runs through the town, permitting small steam-boats to penetrate nearly to the heart of it, and there are passenger services to New York and Newport, but Narragansett Bay, into which the river empties itself, is too shallow for large craft. Otherwise Providence would certainly be a great trading centre and might very well rival Boston. It lies on one of the main railway lines between New York and Boston, and is the centre of a number of branch lines. Like Boston, also, it is a capital and the seat of an administration. In character, however, it remains mainly industrial, though less purely so than Fall River, Lowell or Lawrence. One cannot call it a handsome town, but it has some handsome features. The main streets are good and the broad bridges over the river near the centre form a sort of square or open space, which has quite a Continental air. The State house occupies a commanding position clear of the town and is the finest building of the kind I have seen after the Capitol at Washington. It is in the same style. There are several other good and interesting buildings, including the city hall, court-house, custom-house, Brown University, and certain old colonial mansions. The ground is hilly and diversified, and altogether Providence makes a very favourable impression in spite of the inevit-

able ragged outskirts. With regard to the industrial conditions I have already said enough about the New England textile mills, and those of Providence offer no occasion for special notice. The worsted mills are by far the most important, employing about 8,000 hands. The cotton industry is small. The metal trades are more peculiar to the place and more interesting. I have mentioned the importance of the jewelry industry of Rhode Island and it is almost all carried on at Providence, but as I have had to omit the same trade in England and Germany an account of it would have no comparative interest. It is otherwise with the large metal manufactures of Providence. They include several engineering works—notably the Corliss Steam-Engine Works, the Providence Steam-Engine Company, the Armington and Sims Engine Company—some textile machinery works and others devoted to the manufacture of small machines, machine tools and tools. One of these establishments is well worth seeing and many visitors have gone to Providence for the purpose of seeing it ; among them representatives of the famous Berlin firm of Ludwig Löwe, makers of the same articles. Before building their own new works, which are a model, they paid the United States the compliment of visiting a number of establishments, including the works of the Brown and Sharpe Manufacturing Company at Providence. This business was founded in 1833 by David Brown, who was, I believe, an Englishman, and was carried on for many years by his son, at first alone and then in conjunction with partners. The present company was formed to take over the business in 1868. It manufactures an immense variety of small machines and tools of a class in which American skill, ingenuity and enterprise are at their best. Many hundreds of kinds of milling, grinding, screw and gear-cutting machines, lathes, drills, gauges, scales, rules

and other tools and accessories are turned out here of the finest workmanship. The automatic screw and gear-cutting machines are marvels of ingenuity, and they are to be found in every up-to-date machine shop requiring such tools. The Germans now make them equally well, but America was first in the field, which is peculiarly her own. There are other makers in the United States, but none have a higher reputation than the Providence company. For forty years they have made the Willcox and Gibbs sewing machines, which afford a fair proof of sustained quality. The works, no less than the things made, are of a model character in that which seems to be the coming type for the best employers. It is half-way between the old conditions which took no account of the workmen and the fancy appointments of the modern industrial Paradise. The principle is to provide good working conditions and pay good wages, but to avoid paternalism. The works are new and only a short distance from the centre of the town. I have seen none better. The shops are admirable, very light, clean and well kept, and as orderly as any in Germany. This holds good of the foundry which is quite new and a model of order. The works are closed for a fortnight every August for cleaning and whitewashing. The management is satisfied that the measure pays as it enables the shops and stock to be put in thorough order, and at the same time gives the men a good holiday. The number employed is about 2,300; they are of all nationalities, and include many skilled British mechanics; but a large part are unskilled men. Here may be seen a good illustration of one of the tendencies of modern industrial development. Many of the men are working automatic machines and are incapable of doing anything else; they are making things which they do not understand. The work requires neither intelligence nor skill; but the

manufacturers do not want them to know too much. The brains of the establishment are in the drawing office, which is very large and well appointed. Nevertheless the workmen are a superior looking set; they earn from 8s. to 12s. a day. Washing basins, shower baths and clothes lockers are provided and used; and there is a library but no canteen. The men in the drawing office have been trained at the Technological Institute in Boston, at Brown University, and other places. The manager, like all others of similar experience that I have met, is strongly of opinion that it is best for a man to learn the practical work in the shop first and go to the technical school later. In spite, or perhaps because, of the good conditions of work, the firm is not in good odour with the trade unions and has been black-listed; that is to say, other people have been forbidden to deal with them on pain of incurring the union's displeasure. "The union secretary comes into the office and *a propos* of nothing asks us to 'recognise the union'. We refuse and are black-listed." This illustrates the crude methods of much trade unionism in America. The demand to "recognise the union" when no dispute exists generally means that the union has a difficulty in getting men to join and asks the employer to help it, which is hardly his business.

I have devoted so much space to these works because they are a highly favourable example of the American factory and the most important single establishment in Providence. Those engaged in engineering and in other kinds of machinery are less remarkable, but their products have a wide reputation, notably the Corliss engines and the textile machinery of Crompton and Knowles, who are probably, with the Draper Company of Hopedale, the best known makers of textile machinery in the United States.

The foreign-born population of Providence is 31·8 per

cent. of the whole, which is exactly the same proportion as at Worcester and much less than in the textile towns of Massachusetts. That, no doubt, is because it is less purely industrial. Another point of difference is that Canadians (7,732) are far less, and Italians (6,256) far more numerous. There are eight Italian benevolent societies in the city. Germans are also a strong contingent (2,257) and have numerous societies; but the largest sections are the Irish (18,686) and English (11,635). In connection with the subject of nationality some highly interesting information is afforded by the remarkably complete vital statistics recorded and published in Providence. They are of unique value and especially in relation to that which is the most important of all questions facing the American people—namely, the elements of national vitality. They have been kept for forty-six years. During that period the number of children born of American parents has never reached one-half of the whole. The highest proportion was 45·19 per cent. in 1869; it has since diminished—and for the last fifteen or sixteen years pretty steadily—to 27·92 per cent. in 1901. The native-born population at that time was 68·2 per cent. of the whole. According to these figures more than two-thirds of the population produced considerably less than one-third of the children born. But in order to get the relative fertility of the native and foreign populations correctly, it is necessary to take into account the mixed marriages. In 1901 the actual number of children born was 4,696, being at the rate of 26·35 per 1,000 of the population. They were thus distributed according to parentage: American, 1,311; foreign, 2,440; mixed, 906. If we credit half of the last class to the American and half to the foreign element we get the following totals—American, 1,764; foreign, 2,893; being respectively 37·5 and 62·5 of

the whole number of children. The true relation, therefore, stands thus:—

	Percentage of Population.	Percentage of Children.
American	68·2	37·5
Foreign	31·8	62·5

The birth-rates in the two sections were—American, 14·7 per 1,000; foreign, 51·6. This disparity is partly due to difference of age distribution, there being a larger number of women of child-bearing age among the foreign population. But the facts show how entirely the increase of population by excess of births over deaths depends on fresh immigration. That is seen still more clearly if the death-rates are examined. The death-rate among the American population was 19·7 per 1,000. That is to say, it exceeded the birth-rate by 5·0. The native population is, therefore, dying rapidly. And this process seems to be progressive; the death-rate in that section of the population which was not only born in America but whose parents were born there was 21·66 per 1,000. Thus a progressive decline of vitality is shown both by a lower rate of reproduction and a higher rate of mortality. The same tendency makes itself apparent in the infantile mortality, which is rising among children of American parentage, in spite of the very low birth-rate, and stands far higher than among those of foreign parentage; the respective figures in 1901 were—American, 173; foreign, 146, to 1,000 births. These figures are a terrible satire on the theory that it is better to have fewer children and take good care of them than to have more and neglect them. Nature is not mocked. One more point is brought out by the invaluable records of Providence. We have seen that the American section has never during the last forty-six years produced half the children born. It follows that the so-called native popula-

tion is chiefly of foreign blood. The inference to be drawn is that the immigrant races become Americanised and lose their vitality in the next generation.

Public education in Providence is amply served by sixty-eight primary, fifteen grammar and four high schools. One of the last is for manual training but there is no technical school. Brown University, which was founded in 1764 and is a Baptist institution, had 677 male and 195 female students in 1900-01; the great majority were taking classical or general courses, but there were four students of general science, twenty-three of mechanical and thirty-seven of civil engineering.

Vital Statistics of Providence, 1901.

Population.	Births per 1,000.	Deaths per 1,000.	Excess of Births.	Deaths under one year per 1,000 born.
178,000	26·38	19·35	7·03	152

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
296	461	5,561

Places of Worship.	Theatres.	News-papers.	Public Library.
151	5	28	1

New York City.

To the rest of the world New York, being the largest city and the chief centre of business and pleasure, is the *de facto* capital of the United States though not the seat of Government. Like London and Berlin it is also a manufacturing town, but as in their case that element is overshadowed by others. It will, therefore, be treated in the same way and dismissed with some general observations bearing on its character as a capital.

The great city is fully representative of many features of American life, but the bad ones are more conspicuous.

than the good. In the first place it is typically cosmopolitan. The foreign-born population of the entire city is (1900) 1,270,000, or 37 per cent. of the whole; that of the central area (Manhattan and Bronx) is 41·5 per cent., a portion exceeded in several of the New England manufacturing towns which we have been considering but in few others. The foreign population includes representatives of all nations, but the largest sections are: Germans (322,343), Irish (275,102), Russians (155,201), Italians (145,433), Austro-Hungarians (117,998), English and Scotch (90,358). All colours are also represented, the negroes number 60,666, Mongolians, 6,601 and Indians, thirty-one. It is a curious fact that of all the nations gathered in the city of New York from all the ends of the earth the smallest in number are the real natives and original owners; even such a petty State as Luxembourg outnumbers them. Turks, Arabs, East Indians, Pacific Islanders are far more numerous. The original natives of the whole country, although preserved, are dying out, and to judge from the vital statistics given above, their successors have begun to go the same road. Is it the destiny of the continent? Then, again, New York is typical of a great deal of America in its bustling life, its devotion to money-making, its adventurous methods of business, its extravagant expenditure and love of ostentation. All these things strike every one and have been so often described that I need say nothing more about them. It is also, as a town, typical of the national slovenliness. For a great city most of it is shabby, dirty, unkempt and untidy beyond compare, save in two respects: there are no overhead wires, and the atmosphere is most enviably clean and free from smoke. But one is continually reminded of wretched little towns in the south of Europe by such matters as the condition of the streets,

with which I have already dealt; the gutters; the street sewer openings, which are of the primitive "wolf's mouth" form; the dilapidated horse trams that still run in the heart of the city or did in 1903; the rickety lamp posts and shabby letter boxes. These are originally painted silver, but weather and neglect turn them to a dirty drab. Their shabbiness is not peculiar to New York but it seems rather intensified there. So, too, with the slovenly speech of the people. Most capitals develop a slang of their own, consisting partly of words and phrases and partly of a peculiar pronunciation. The London cockney speech—always presented, in caricature, to American readers and playgoers as "the English accent"—has a counterpart in the slovenly enunciation affected by that class which in New York corresponds with the cockney in London; and I fancy that the origin is much the same in both cases. The trick is an affectation thought to be smart, just as the failure to sound the letter "r" and the use of such ejaculations as "haw" are English affectations of speech in a different class. I observed one day in the company of some American gentlemen that the cockneys of New York, if I may use the term, seemed to make a point of never finishing a word, and I was told that it is a recognised habit. They seem too weary to say a whole word. "Sixth Avenue," for instance, is pronounced "Sis' Avn'," and "Yes" becomes "Ye". The quick closure of the lips after "Ye" produces an effect like a faint "p," and many writers make Americans say "Yep," but that is a mistake. The word is the smart cockneyfied form, produced by omitting the final letter. The trick seems to be becoming general among those who wish to be thought "knowing".

Slovenliness in speech, to which reference has been made in a previous chapter, is allied to other slovenliness

and has a direct bearing on industrial efficiency, so that it may properly be mentioned in connection with New York where it reaches its highest expression. But the subject of pronunciation tempts one to be discursive, and I will beg indulgence for a few more observations. Most of the characteristic sounds in American speech, except some of those in the south which seem to have been assimilated from the negroes, can be traced to English local dialects with some admixture of Irish and French elements. The most pronounced of all, namely the long "o" uttered like "ah," in such words as "hot" and "stop," is the English south-country drawl. The Surrey rustic pronounces "bottle" "bah-tle". It is very interesting to trace these derivations; they are the outward sign of derived qualities. Cultivated Americans do not use the vowel sounds I have just indicated, but they are general in the streets, like the London vulgar perversions, which are commonly put in the mouths of Englishmen of all classes on the American stage and by many American writers. This is notably the case with the drawled "a" as in "bawth" (bath), which is a pure vulgarism never used by any educated Englishman. The short, sharp American "a" is partly Irish and partly north-country English. Some of the American vowel sounds are very pleasant to the ear, particularly in the mouths of men; the hard voices of the women pinch them too much and make them harsh. Speech in the Southern States differs considerably from that in the North and is full of pretty sounds and intonations. Between refined English and American speech, however, there is very little, and sometimes no difference. I have the English accent myself—and after all no apology is needed for speaking French with a French accent—yet I have been taken for an American by one in America on account of my speech.

Among the good features in which New York is representative, street locomotion must be counted. Apart from the old horse trams mentioned above the facilities are good and abundant. Rapid locomotion is, indeed, absolutely essential owing to the shape of the town, disposed as it is on a long narrow tongue of land surrounded by water save in one direction. The central business part can only expand longitudinally in that direction, and the residential quarters must either recede before it at the far end or be driven across the water. It is surprising how quickly the distances are covered by multitudes of persons with the aid of electric trains and trams. The urban trams of America are distinguished from those of Europe by being driven at a greater pace, and in spite of the traffic in New York they cover the ground in a wonderful way. It is done by running at full speed even for the shortest distance; they always start at full speed with a jerk which is dangerous to the unaccustomed traveller. The whole thing is characteristic —the mechanical appliances, the machine-made speed, the reckless use and the danger to life and limb—but I confess the pace appeals to me. Another great feature of New York, which also arises from its position, is the unrivalled accommodation for shipping provided by the great extent of water-board. This is, of course, the making of the place, and well the site was chosen. There is no need of docks, with all the delay, bother and expense of tidal gates. The largest vessels in existence simply steam up the mighty Hudson River, which is the harbour, and swing quietly into their berths alongside the quays at right angles to the stream, each in its own niche. They come in bow foremost and when they depart they simply cast off and back out into the river. The water front is indented with these niches for miles, and as the shipping increases they simply

extend further up along the shore. The enormous advantage of this arrangement, apart from the ease with which vessels arrive and start, is that the shipping extends along the peninsula, parallel with the town, and is thus distributed instead of being congested in one spot or at one end as it usually is in ports. The same arrangement obtains in the opposite shore of the Hudson in Jersey City and Hoboken, and it extends round the point of the peninsula, which is Manhattan, to its eastern shore opposite Long Island, on which Brooklyn lies. I have never seen these features of the port of New York described, but they are of incalculable importance. They explain the ability of the port to swallow with ease the colossal growth of the outward and inward trade and they render it capable of indefinite expansion, as the landward traffic can be handled with ease on this extended shore line without incommoding the central arterial thoroughfares. If New York had the sort of harbour most seaports have it could not carry the traffic through the heart of the city at all; but being so favoured by nature it can absorb an unlimited quantity and is destined to surpass London as certainly as the Hudson surpasses the Thames. It is impossible to estimate what this means to the development of the country, but in a certain sense New York is the making of the United States, and that more truly than London is the making of England or any other individual city is of its country. The point has an obvious bearing on the industrial future of the States; they can always rely on the port of New York. The men who chose the site were wiser than they knew. It was quite a long time ago, for New York is not a young city; it has been a municipality for over 250 years. The only weak point about the port is the long and tortuous channel outside, round by Sandy Hook.

The same factor of natural position, which has made the port and stimulated the system of street locomotion, is responsible for another but not a good feature of the city —the housing and the buildings. The compression into a narrow space has not only produced the vast twenty- and thirty-storied blocks—said to have originated in Chicago —for business purposes, but has forced the bulk of the population into flats, as in Berlin. In the whole city of New York, which now includes Brooklyn together with another large slice of Long Island as well as Staten Island on the other side of the Hudson, the average number of persons to a dwelling is 13·7, which represents about three families; but in Manhattan and its northern extension, the Bronx, the average number is 20·4 or between four and five families; in Manhattan alone it must be very much higher. The "housing question" is here as exceptional as in London and huge tenement buildings are the rule. An investigation of the way the poor live in New York lay outside the limits of my inquiry and I could not give much time to it, interesting as it is; but I paid some visits to the lowest quarters and gained a few impressions. A swarming international ant-heap, with a great deal of obvious poverty and squalor and all the elements of lawlessness; but accounts of its horrors which I have read seemed to me exaggerated, as such accounts usually are. Similar descriptions of London and Paris have often been written, but I know from personal investigation that they are very highly coloured. I have been in all the "dangerous" places which "the police dare not enter" in London and in most of those in Paris. They may be dangerous to a single policeman because he is one, though the police do not say so, and they would be to a drunken man, a woman or other helpless individual displaying signs of wealth about the person; but to an able-

bodied man they are not. Police protection is much less efficient in America than in Europe and lawlessness is far more general, as I have already pointed out, but I should not be afraid to go anywhere in New York. Misery is undoubtedly great, as great perhaps as in London, and the death-rate proves that the sanitary conditions are what might be expected from the general air of neglect. In 1901 it was 20·5 per 1,000 for the whole city against 17·6 in London and 18·0 in Berlin. Yet the proportion of well-to-do residents living in good conditions is quite as large in New York, and the age distribution of the population must be much more favourable on account of the vast number of immigrants. There is a large and active public health staff and improvement is going on ; but New York still exemplifies the backward state of sanitary administration general in America. About municipal corruption I can say little, as I have made no study of it, but the signs of mal-administration in the past are all-prevalent. The street architecture is also typical. Its leading notes are anarchy, shabbiness, personal ostentation and public indifference. Those of London street architecture are dingy meanness, personal reserve and public aspiration imperfectly fulfilled ; those of Berlin are monotonous order, suppression of individuality, public grandiosity and bad taste. Each of the three is a standing embodiment of prominent national characteristics. The sky-scraping buildings of New York testify to American ingenuity, adventurousness and contempt for order. They are a bold but not entirely successful attempt to neutralise the natural conditions by making room in a cramped space. They would not be possible everywhere, but Manhattan island is a tongue of rock and the foundations would bear any weight. They are attended, however, by certain disadvantages and seem

to have passed the zenith of favour. It is being found necessary to regulate the height of buildings, and that process once begun will inevitably go on. The superior residential quarters form a great contrast to the rest. The houses are handsome, well-built and eloquent of wealth. The streets here are well laid and well kept, and the Central Park, which lies among them, is worthy of a great city.

A vast number of industries are carried on in New York but few are on a large scale. The largest single groups are clothing and tobacco; those to which the term "manufactures" usually applies are for the most part on a small scale, but nearly 20,000 men are employed in foundries and machine shops, and several thousand more in other branches of ironwork. Musical instruments, silk, boots and shoes are also manufactured on a considerable scale; but there is no concentration of special branches of manufacture. In short New York, as I began by saying, is rather a trading than an industrial centre; and with that I will leave it and pass on to Pennsylvania.

Pennsylvania.

Pennsylvania is a mighty manufacturing State. Judged by the amount of power used it is and has been for thirty years the greatest of all; judged by the value of products it has been for fifty years only second to New York. It is second in population with 6,302,034 inhabitants, of whom 733,834 are returned as "wage-earners engaged in manufactures". This represents 11·6 per cent. of the whole, a much lower proportion than the 17·7 per cent. of Massachusetts and the 23·1 per cent. of Rhode Island, and indicating less concentration than in the New England States; but it is almost exactly the same proportion as in New York and

considerably higher than in any of the States further west. The density of population is 140 to the square mile. In another sense Pennsylvania boasts the greatest concentration of all. It has a much larger number of establishments employing over 500 hands than any other State. Its industrial activity is of long standing and in the first instance is due in a great measure to geographical position. The State lies between the great lakes and the Atlantic, and touches both. So do New York and New Jersey, but Pennsylvania has in addition water communication which they have not; the Ohio river brings it into direct relation with the Central States and by way of the Mississippi with the South. The importance of the internal water transport before the railroad era is shown by the fact that it was extended and completed by some hundreds of miles of artificial waterways, but as in England these have been neglected since. Unlike New England, Pennsylvania also possesses exceptional natural resources, not only in coal and iron but in other raw materials. It produces regularly more than half the total coal got in the United States, and it has also been exceedingly fortunate in the possession of natural gas, though the yield is now diminishing. Water-power, which was once an appreciable asset, though less than in Massachusetts and New York State, is also declining. The use of electricity for industrial purposes, on the other hand, is increasing, and in this respect Pennsylvania easily heads the list. The amount of horse-power derived from electric appliances reported in 1900 in the leading States was—Pennsylvania, 107,888; New York, 78,000; Illinois, 49,250; Ohio, 42,202; Massachusetts, 32,843. And since the application of electricity is to a considerable extent a measure of industrial advance, Pennsylvania is evidently keeping well in the forefront. In no part of America are the industrial

methods more completely up to date. The great manufacturing industries include both iron and steel and textiles. The total number of wage-earners employed in the production of iron and steel, engines and machinery in 1900 was 173,692, and in textiles 102,213. Pennsylvania, therefore, as a combined coal and iron and textile country, is analogous to Yorkshire and the Rhine province. The other industries are relatively unimportant. The largest of them are tobacco, leather and lumber, all of long standing and drawing the raw material from the spot.

The iron industry has a history of more than two centuries; it is mentioned as early as 1692, and in 1728 Pennsylvania exported 274 tons of pig iron to England. The appearance of America, therefore, in the market is not an affair of yesterday, as is often assumed, and there is more matter for surprise in the delay rather than in the rapidity of development. The manufacture was at first carried on upon the eastern side of the State; then, on the discovery of magnetic iron ore in the Cornwall hills, it moved a little westward near Harrisburg, the present capital and the seat of some of the largest steel-works in the States. The day of Pittsburg was still far distant. A blast furnace was built there towards the end of the eighteenth century but it was abandoned for lack of ore in the neighbourhood. The production of steel can hardly be said to have begun in America before the nineteenth century, though it had been attempted as early as 1750. About 1812 a steel furnace and a rolling mill were started at Pittsburg, and from that time slow and somewhat uncertain progress was made for many years. The very rapid development which has taken place more recently must be ascribed to a number of causes. One was the substitution of coal and coke for charcoal in the production of pig iron from about 1840 onwards. An-

thracite coal was chiefly used at first. This is found on the eastern ranges of the Allegheny hills, but the great development of the Pennsylvania iron and steel industry has coincided with the utilisation of the bituminous coal fields, which lie on the western side. This, together with the tapping of the Lake Superior ores and their transportation by water to Pennsylvania affected a gradual shifting westward of the centre of the iron industry to the Pittsburg district, which lies on the western border conveniently placed between the sources of the ore and the fuel and is easily reached by both. Meantime the production of steel had been improved and developed. Pittsburg came to the front with crucible steel about 1860; Bessemer steel followed and, still later, the open hearth process. The most marked feature of the recent progress of this great and fundamental industry has been the increasing use of open hearth steel, and the rapid growth of the manufacture of tin and terne plate.

Of the textile group the most important items are hosiery, silk, cotton and wool. These are all old-established industries in the State. The making of hosiery and woollen cloth was introduced by the earliest German and English settlers some 200 years ago; silk was encouraged by Benjamin Franklin in 1750, and a spinning jenny for spinning cotton was put up in Philadelphia in 1775, a very few years after its invention. Factory-made cotton goods were turned out at least as early as 1782. Here, again, the current idea, that England owed her supremacy to the advantage of starting the "factory system" and the use of machinery long before any other country, requires a good deal of qualification. Philadelphia was very early in the field, and its rise to the position of the greatest manufacturing city in the world has been gradual. I will justify this description presently when I come to the town itself.

The industries carried on in Pennsylvania are widely distributed in a large number of centres. After Philadelphia and Pittsburg, which head the list, come in order of industrial importance, Allegheny, Reading, Scranton, Lancaster, Erie, Allentown Altoona, Chester, McKeesport, Harrisburg, and others. All these are small or medium sized towns and of no special interest. I mention them to give an idea of the distribution but do not propose to describe any of them though I have visited some, as Philadelphia and Pittsburg will sufficiently represent the industrial conditions prevailing in this coal and iron State.

Philadelphia.

I have just called Philadelphia the greatest manufacturing city in the world, and I believe it to be so. True, it does not compare with such monstrous aggregations as London and New York; but then they are not manufacturing cities in the same sense. They are primarily something else and the manufactures are mainly accidental or secondary; they are there because the population or the traffic is there. That is shown by their miscellaneous character and the small scale on which most of them are conducted. In the aggregate they employ a vast number of people and produce an immense quantity of goods, but individually they belong rather to the small than to the gross industries. But Philadelphia is primarily a manufacturing place, and the leading industries are carried on in very large establishments on a great scale. It is also a river port, which enables it to add shipbuilding to the rest, and it owns the largest yard in the States; but the port business is quite subordinate. Since the days of William Penn, the Quaker, who founded the town in 1682, it has been the seat of manufactures, and that character has always

been prominent; but in times past Philadelphia has played another part. It has a very distinguished history, more distinguished on the whole than that of any other city in the States. Here the earliest sittings of Congress were held before the revolution; here the Declaration of Independence was drawn up and issued in 1776; here the Constitution was forged in 1787; here the first President resided and here was the seat of Government of the United States down to 1800. The population was then 67,811 and exceeded that of New York; the inhabitants were citizens of no mean city. A century later they numbered 1,293,697 and formed one of the great cities of the world and the third in size in the American continent. It therefore combines the high tradition of leadership in a mighty political movement with modern industrial development on the largest scale, and therein it has the advantage of New York and still more of Chicago, which represents the highest point (or lowest depth) of commercialism and nothing else. I think Philadelphia looks its character. It has not the charm of the old German capitals which have become manufacturing towns, such as Dresden, Munich, Stuttgart or Düsseldorf, but it has character and dignity. It is a city, not a ragged overgrown village like most of New York, nor a huddle of dingy squalor like the greater part of London, Manchester or Glasgow. I have been to the outskirts of the town in most directions and I have found all of it decent and some very good. There is nothing grand in Philadelphia. The city hall is of colossal size—said to be the largest in the world—and it has cost millions, but in spite of its dimensions and a central tower 547 feet in height it fails to impress and is architecturally a failure. There is a superabundance of churches; I have made out nearly 800 of various denomination from the directory, but

none of them are really fine though two or three are interesting. The best buildings are those of the University of Pennsylvania and some of the hospitals, with which the town is magnificently endowed. The old Independence Hall, from the steps of which the Declaration was proclaimed, possesses great historical interest and inspires respect as the shrine of a splendid tradition, but its architectural merit is slight. In spite, however, of the absence of beautiful or imposing edifices the general impression produced is very favourable. The standard maintained is high and some features are very pleasing. Of late years the municipal administration has been notorious for corruption, but the town bears as many signs of having been well administered in the past as New York does the reverse. I have already mentioned the superior character of the street paving and particularly the large extent of asphalted street. There are 321 miles of asphalt, 360 of granite, 226 of macadam and 134 of brick. The streets are not only well paved but exceptionally well kept. A much larger amount of garbage is disposed of weekly in Philadelphia than in any other American city, and it is all burnt. The lighting is also unusually good. The number of arc lamps is 9,083 against 11,975 in New York. It may be interesting here to compare the street lighting of the five largest cities in the United States.

	Miles of Street.	No. of Lamps.	No. of Lamps per Street Mile.
New York . . .	2,527	61,424	24
Chicago	4,162	35,743	8
Philadelphia . . .	1,540	44,011	28
St. Louis . . .	1,678	15,961	9
Boston	587	14,953	25

Philadelphia has the greatest number of lamps to the street mile, and since it also has a larger proportion of arc

lamps than the rest, except Boston, it is statistically, and in my opinion actually, better lighted. Washington also has twenty-eight lamps to the mile and is about equally well lighted. The position occupied in this little table by the more western cities is highly significant.

Another conspicuous feature of Philadelphia is the very large area of public parks which it possesses. The total is upwards of 4,000 acres. The greater part of this consists of Fairmount Park, which lies just outside the town and extends along the Schuylkill River for some miles; it covers 3,000 acres. Parts of it are conventional, laid out ornamentally, with statues of Lincoln, Grant and Washington, and it contains zoological and horticultural gardens, waterworks, and various buildings; but other parts are quite natural and romantic. It is a fine possession, unequalled so far as I know by any provincial town; and the people are justly proud of it.

The town, which lies on flat ground between the Delaware and Schuylkill rivers, is well laid out on the geometrical plan, and the streets running north and south are numbered, while those crossing them are named; and in the centre, which is the oldest quarter, the pretty idea of giving the names of trees forms a pleasant change from the usual poverty-stricken street nomenclature. Chestnut, Walnut, Cherry, Spruce, Vine, and so on, have a flavour. Chestnut is the aristocratic street both for houses and shops; it corresponds to Fifth Avenue in New York or to Piccadilly in London. So far as shops are concerned Philadelphia is second to no city in America, and that means in the world, for American shops are more splendid than those of any other country. The dress shops surpass everything, and it is noticeable that those for men are scarcely less conspicuous than those for women. The most beautiful shop

window I have ever seen was in Philadelphia, and I never passed it without stopping to admire. An account of it will give the reader a good idea of the American art of dressing the shop window. It was excessively pretty by day, but after dark exquisite. It belonged to a great drapery store occupying a whole block and was one of many. The rest were very fine but this beat them all. The three sides of the room (the window forming the fourth) and the floor and ceiling were all set with electric glow lamps each tied up in a knot of the most delicate pink and green ribbons. There were about eighty of these lamps to that single window and the only objects in it were a large white hat and a white parasol. So it remained lit up all night. Shop windows are always interesting, but I never saw one really beautiful before. Let no one think this little matter trivial or irrelevant. It illustrates one of the secrets of American commercial success. The shop window embodies the art of attracting attention, exciting curiosity and making a good impression—the great art of advertising; and no people spend so much thought and money upon it as the Americans.

In regard to housing Philadelphia differs markedly from New York and, indeed, from any of the towns I have described. Boston most nearly resembles it. In the first place flat life gives way to private houses. There are in the city 265,880 families living in 241,589 dwellings, which is not far short of a house to every family. It may be put in another way. The average number of persons to a dwelling is 5·4, and of persons to a family, 4·9. How different this is from the usual conditions in the great cities may be seen from the following table, which compares Philadelphia with ten others in their order of precedence:—

City.	Population.	Average Number of Persons.	
		To a Dwelling.	To a Family.
New York	3,437,202	13·7	4·7
Chicago	1,698,575	8·8	4·7
Philadelphia . . .	1,293,697	5·4	4·9
St. Louis	575,238	7·0	4·6
Boston	560,892	8·4	4·8
Baltimore	508,957	5·7	4·8
Cleveland	381,768	6·0	4·7
Buffalo	352,387	7·1	4·8
San Francisco . . .	342,782	6·4	4·8
Cincinnati	325,902	8·0	4·4
Pittsburg	321,616	6·3	5·0

It almost follows as a matter of course that the character of the residential buildings is more regular than elsewhere. There are few or none of the great structures in which many families are housed. And, more than that, there is a marked absence of pretentiousness on the one hand and of squalor on the other. The rich are less splendidly, the poor less miserably, housed. The streets wear a general aspect of modest but solid comfort well diffused. Slums, of course, there must be in such a huge place with a large trading element; they have been officially investigated and reported on. And, of course, there is poverty; but a good deal of time spent in looking for slums revealed very much less than experience led me to expect, and, on the other hand, brought to notice large working class areas of excellent houses after the style of the best industrial housing in England. Rents are much higher, but not so high as in many towns in America. Very good six-roomed houses with bathrooms were about 14s. a week, four-roomed about 10s. A very ingenious system of numbering the houses is worth notice, as it enables one to find a particular address or to ascertain one's whereabouts with great ease. I have already said that the streets running north and south are numbered

first, second, third, etc., beginning from the Delaware River and proceeding westward; they are, of course, intersected by the named streets running east and west; the houses in the latter are numbered according to the streets they lie between on the basis of hundreds. For instance, those in any cross street lying between sixth and seventh street are numbered from 600 to 700, and so with the rest. In like manner the houses in sixth and seventh streets are numbered according to their distance north or south of a central line formed by Market Street, which is the main artery in the heart of the town. Thus the street number indicates the locality and the distance from the centre in any direction.

The site was no doubt originally chosen on account of the Delaware River, which forms the eastern boundary and divides the State of Pennsylvania from New Jersey. It is a noble stream pretty nearly a mile wide here at a distance of ninety miles from the Atlantic sea-board. The big liners and battleships come up to Cramp's famous yard which lies some way above the middle of the town. The river front is lined with quays like the Hudson at New York and is devoted to business. This is the dirtiest and least attractive part of Philadelphia; no use is made of the river for ornament or pleasure, though there is a certain amount of passenger traffic by local boats in summer.

The racial distribution of the population differs considerably from that in the towns previously reviewed. The negro element is very much larger. I have hitherto said nothing about this factor because in the New England industrial centres it is too small to possess any importance. In most of them the coloured population is quite insignificant —far below 1 per cent.—and even in Boston and Provid-

ence, where the callings mostly pursued by negros (waiters, boot-blacks, attendants, etc.), are more developed, they only numbered between 2 and 3 per cent. In New York they are less than 2 per cent., but in Philadelphia the proportion rises to 4·8 per cent. The actual number is 62,613, but this has no industrial significance. They are not employed in manufactures, but in hotels and clubs and other occupations higher in the social scale. I have no information on the subject, but it appeared to me that Philadelphia is the home of a coloured aristocracy. There are eighteen African Methodist Episcopal Churches. I attended service at one of them on a Sunday, and found a striking contrast with others I have attended in the South. The service was practically indistinguishable from a high church (not ritualistic) Anglican one in England, except that the surpliced choir was formed by women. The sermon, the tone and manner of the whole service and the demeanour of the congregation reminded one of St. Mary Abbots or any church of that moderately high order which is now so general in England. The signs of refinement, taste and culture were striking. Every Sunday that I spent in the States I made a point of going to as many churches of different kinds as I could get in, and my experience ranges from a pure specimen of negro fervour in Columbia (S. Carolina) to St. Patrick's Cathedral in New York and Trinity Church, Boston, which corresponds (say) with St. Margaret's, Westminster, and is the resort of the intellectual aristocracy. The African service in Philadelphia was no whit less refined. The strain of negro blood ran very thin in the clergy and in many of the congregation, so thin in some cases as to be recognisable only on careful scrutiny. I have seen the negro horn exalted on a different field in Philadelphia in the person of a coloured foreman ordering about a gang of European work-

men. A second point of difference is that the foreign-born element is less, being only 22·8 per cent. The order of the nationalities is: (1) Irish, 98,427; (2) Germans, 71,319; (3) English, Scotch, etc., 46,264; (4) Russians, 28,951; (5) Italians, 17,830; (6) Austro-Hungarians, 8,209; (7) Poles, 7,554; (8) Scandinavians, 3,769; (9) Canadians, 3,283; (10) French, 2,521. The total number of foreign-born residents is (1900) 295,340. Those of British and German origin are chiefly engaged in the manufacturing industries.

Of the total number of persons above ten years of age engaged in gainful occupations 259,197 are employed in "manufacturing and mechanical pursuits," as against 152,262 in "trade and transportation". This will show the preponderance of the industrial element; it constitutes 25 per cent. of the whole population above ten years of age. The proportion in Fall River, which is of the purest industrial type, is 42 per cent., that in New York is 20 per cent. Numerically, therefore, Philadelphia approaches more to New York in its industrial character; but the term "manufacturing and mechanical pursuits" is wide, and the "gross industries" of Philadelphia, as I have already observed, make it a true manufacturing city. The metal trades and textiles are almost equally represented. According to the Factory Inspector's Report for 1903 the number employed was—textiles, 46,423 in 573 establishments; iron and products, 37,564 in 250 establishments; miscellaneous manufactures, 43,805 in 736 establishments; leather, 7,226 in 50 establishments. The metal trades are chiefly concerned with the production of finished articles in great variety, including ships, machinery, hardware, nuts, bolts, rivets, etc. Baldwin's huge locomotive works, which occupy a great extent of ground in the heart of the city, are the most important single establishment and the largest

works of the kind in America. Of 2,831 steam locomotives built in 1900, 1,465, or more than half, were credited to Pennsylvania, and the great majority of them came from Philadelphia. The industry dates from 1831, and of late years it has enjoyed a rapidly increasing export trade. The number of locomotives exported from America rose from 142 in 1894 to 525 in 1900. The special article on the subject in the census states that they "have found their way into all parts of the world, having proved their superiority over every type of foreign locomotive with which they have been brought into competition". By this time, however, the statement requires a good deal of qualification. Many of the engines supplied, and notably those used in India and Egypt, have proved unsatisfactory on trial and have earned a bad name. They are cheap and turned out very rapidly and the interchangeability of parts makes them convenient; but they do not last. They are very wasteful of fuel; they break down soon and often, on account of rough workmanship and want of finish. In short, they have the characteristic merits and defects of American work. The great locomotive works in Philadelphia have been condemned in scathing terms by the Secretary of the English Amalgamated Society of Engineers, in his report as a member of Mr. Moseley's labour party and I can only endorse his account. They are quite out of date and not to be compared with the chief locomotive works in England. It would, indeed, be difficult to find any large engineerng works in England and impossible to find any in Germany so old-fashioned and in every respect unsatisfactory. They ought to be removed bodily out of the city and rebuilt where there is plenty of space. The working day is ten hours on the day shift and thirteen on the night shift. The average wages are 8s. a day.

Cramp's shipbuilding yard is the second great metal-working establishment in Philadelphia, but since I have omitted corresponding works in England and Germany from my survey, and in shipbuilding America cannot be said to compete effectively at the present time, I need say no more about it.

Of the textile industries the largest is the manufacture of carpets and rugs, in which over 12,000 hands are employed. It is an old Philadelphian industry dating back at least to 1791, and it is carried on here upon a larger scale than in any other American city. The modern methods of manufacture are claimed for an American inventor whom I have already mentioned. "It is to the inventive genius and business ability of Erastus B. Bigelow, of Boston, Mass., more than to any other man, that the carpet industry of the world owes its great prominence. He first, in 1844, adapted the power-loom to the weaving of ingrain carpets. A few years later he invented and patented the power-loom for weaving Jacquard Brussels and Wilton carpets."[1] On the other hand I find it stated in the *Penny Cyclopædia*, published in 1836, that the Jacquard loom had then been for some years applied in England to the weaving of ingrain (Kidderminster) carpets and partly applied to Brussels. I do not know whether the two statements are reconcilable or not; but if modern carpet-weaving was invented in the United States the start has not been well maintained. It required a protective tariff to secure the home market, and in spite of it Europe still exports carpets to America. The quantity in the twelve months ending June 1904 was 665,562 square yards, of which 254,744 square yards, or considerably more than one-third, came from the United

[1] *Twelfth Census*, U.S.A., vol. ix., p. 104.

Kingdom. The exports from the United States in the same year were only 60,723 yards, and so far as I can ascertain none came to the United Kingdom. It is the finer kinds of carpets and rugs that are imported into America. As in cotton and worsted goods, the American manufacturers are still behind their English competitors in the higher grades. Philadelphia is the greatest centre of this industry in America; it manufactures very nearly one-half the total value of carpets produced in the United States; and the cheaper kinds constitute the great bulk of its output, out of 4,693 looms engaged in weaving ingrain carpets it owns 3,737; but the higher grades—Brussels, Wilton and Axminsters—are produced more in Massachusetts and New York.

The carpet and other textile mills are mostly situated on the northern side of the town a long way from the centre. The work-people live in the vicinity in capital houses and form a regular industrial quarter. Many of the mills are new and the conditions are good except for dark weaving sheds on the ground floor with other rooms above them, necessitating the use of electric light all day. In a leading mill, in which Brussels and Wilton carpets are made, I found English looms, made in Heywood and Halifax, which seems curious if they are an American invention. The weavers also were exclusively English and chiefly from Kidderminster. The superintendent or foreman was also English, from Halifax. The wages earned here were very high; male weavers were making from £4 to £6 a week and female (also English) from 48s. to 60s. They admitted that they worked very much harder than in England and found the high wages an incentive. The week is sixty hours; the day begins at 6.45 and three-quarters of an hour is allowed for dinner.

Another important branch of textiles in Philadelphia is upholstery. It has undergone very rapid development in recent years and now constitutes a considerable branch of the cotton manufactures. Philadelphia has almost a monopoly of it in the States. The conditions of work are practically the same as in the carpet mills, but the earnings are less. In one mill in which they were said to be unusually high I found weavers (nearly all men) getting from 60s. to 72s. a week, winders from 28s. to 36s. and other hands about 28s. The manager here was a German from Würtemberg, and a highly ingenious gentleman. He illustrated the influence which the air of the United States certainly possesses in developing American qualities in immigrants. Some clever devices which he showed me were quite characteristic. One was a simple way to make reversible curtains. These are apparently much prized in America but they require special machinery and are costly to produce. He showed me some which looked quite right but were made on the ordinary looms; he had simply sewn two together back to back. The workmen employed here were American, German and English.

It would require a volume to give an account of all the manufactures of Philadelphia, but perhaps the foregoing notes will suffice to indicate generally the conditions of industrial life prevailing in this remarkable city. On the whole they are better than in any other town I have seen in the States, and I am not sure that the expression might not be extended to cover other countries. But I cannot leave the subject without trying to give some idea of the extent and variety of the manufacturing industries carried on, and I therefore append a list of the principal ones with the average number of wage-earners employed, extracted from the census of 1900.

Industry.	No. Employed.
Foundry and machine shop products	19,643
Clothing, factory product	12,836
Carpets and rugs other than rag	12,190
Hosiery and knit goods	11,944
Cotton goods, small wares and waste	10,757
Woollen goods	9,438
Worsted goods	7,407
Leather	6,949
Tobacco	6,032
Iron and steel, various	4,869
Boots and shoes, factory product	3,782
Dyeing and finishing textiles	3,455
Shirts	2,829
Cars	2,780
Silk	2,506
Tin and copper	2,304
Fur hats	2,116
Chemicals	1,917
Glass	1,914
Brick and tile	1,451
Hardware	1,273
Electrical apparatus	1,253
Cordage and twine	1,168
Brass	1,104

In addition there are many other true manufactures such as pottery, paper, artificial flowers, buttons, brushes, jute, files, cutlery, musical instruments, shoddy, wire, tools, toys, etc. I am certain that no city in any country can show so great a variety of gross industries carried on upon so large a scale. It is unique in textiles alone; practically all the branches are included except lace and linen. Yet the metal trades are nearly equal to the textiles, and to both are added leather, boots and shoes, paper, glass, chemicals and others which are hardly ever found in combination. Philadelphia has the makings of ten ordinary manufacturing towns; and to this remarkable conjunction of trades must be ascribed the high and stable condition of prosperity, of which so many signs are visible. The attention of those who are interested in technical educa-

tion is drawn to the fact that here in the greatest of manufacturing cities the multifarious industries owe their flourishing condition in but a minor degree to this element. The Philadelphia School of Applied Art, founded in 1876, contains a Department of "Textile Design and Manufacture, comprising fabric structure and design, weaving, colour harmony and figured design, chemistry, dyeing and printing, wool carding and spinning, worsted drawing and spinning, cotton carding and spinning, hosiery knitting and spinning". This sounds exceedingly complete, but is somewhat misleading. The institution is not exactly, as might be supposed, a higher trade school like that of Crefeld or Bradford or Lowell, where all the processes of manufacture are taught in a practical way; it is rather an art school with industrial applications. As such it undoubtedly performs a valuable function; the designing department is very extensive and well organised and there is a large instalment of looms. The art side of textile manufacture is well developed and the teaching is of great advantage not only to manufacturers and experts but also to aspiring operatives, of whom a considerable number attend the evening classes. The list of past students includes many designers, dyers and loom fixers engaged in the mills. I do not wish to belittle the value of the school, but it does not offer a complete training even in the limited branches of industry to which it applies. The engineering and machinery branches are served by the Drexel Institute, which was founded in 1891 and is one of the numerous marks left on modern American education by the hand of the millionaire. The founder has expended some £600,000 on the building, equipment and endowment, and has presented a very fine gift to Philadelphia. Its educational functions are somewhat miscellaneous, but so far as engineering

and machinery are concerned it resembles the Art School in coming in from above rather than working up from below; the courses are scientific and theoretical. The case is otherwise with a third establishment, the Spring Garden Institute, which was founded in 1851 in order to teach industrial drawing and design. Hand trades and electricity were subsequently added. There are day and evening courses, the latter for working mechanics and apprentices. In 1900 it had 101 day students and 793 night students. The great majority of the latter attended the drawing courses; the mechanical department had seventy-five and the electrical 140 students. The institution has undoubtedly exercised a considerable influence in assisting capable and aspiring mechanics to fit themselves for higher positions; but the numbers seem small compared with some of the English schools doing similar work. The higher branches of engineering are provided for by the University of Pennsylvania, which in 1900 had an aggregate of 182 students engaged on civil, mechanical, electrical and chemical engineering.

With regard to public education Philadelphia, which is a county, is a separate unit and independent of the State Board of Pennsylvania. The elementary schools are managed by sectional or district boards, elected *ad hoc*, under the supervision and control of a board of education, appointed by the courts in session, which also manages the evening and higher schools. I am afraid the system is far from satisfactory. While I was in the city the president and two members of one sectional board were convicted at quarter sessions on the charge of demanding bribes from candidates for the post of teacher. The number of school buildings (1901) is 328, containing 2,878 school-rooms. The number of children on the register is: Day schools, 166,013; night

schools, 19,304; kindergartens, 14,959; high schools (five) 5,641. The average attendance at the evening schools is 9,713, which is an unusually high proportion. Great stress is laid on manual training schools.

It is somewhat surprising that such a city as Philadelphia should not have had a free library until 1892 and then only a branch. The central library was not opened until 1894. Its comparatively short life, however, has witnessed a very rapid development. In 1901 it possessed 239,183 volumes and had fourteen branches. The circulation amounted to nearly 2,000,000 volumes, not including the fine reference library which is said to be very largely used; but 77 per cent. of the issues were fiction. The reading-room is very abundantly supplied with monthly and weekly periodicals both American and English, but the only daily paper on the list is *The Times* (London); perhaps that is the weekly edition.

The vital statistics of Philadelphia are defective and of doubtful value, but if the registered death-rate of 18·27 (1901) be correct it is below that of the New England manufacturing towns and to be ascribed, I should say, to the good housing conditions and general level of prosperity. The death-rate from typhoid fever is 3·3 per 10,000, which is very high, and undoubtedly due in a large measure to the water supply, which is unfiltered. Philadelphia is a good instance of American backwardness in relation to water supplies. The town is a pioneer in the matter, and has owned its own water works longer than any other in the States, or in England either so far as I know. It built them in 1801. Yet in 1901 the water remained unfiltered, in spite of a very severe visitation of typhoid fever in 1898-99, when over 14,000 cases occurred. The purification of the supply has since been taken in hand and

may, perhaps, be completed by this time. But filtration works will not end the matter. It will be found necessary to stop the monstrous waste which has been going on under an unlimited supply of unfiltered water. The consumption in 1899 was about 240 gallons a day per head of the population, which is about ten times as much as is required for use and an impossible quantity to supply filtered. The charge of bad administration, which I have mentioned above as having been current of late years, seems to be well founded in this particular. Philadelphia is exceptional in owning its own gas-works, which were built by the town in 1836, but are leased to a company.

Lying half-way between New York and Baltimore, Philadelphia marks the first stage on the great roads to the south and the west from New York. This position makes it the largest railway centre in the continent. Its water communication has already been mentioned. It is also connected by direct railway lines with several resorts on the Atlantic coast. The largest of these is Atlantic City. The proximity of this American Brighton or Blackpool enables the work-people of Philadelphia to do what few others in America can, and take trips to the seaside in summer. This practice, which has become almost universal among the English working classes, is one of the features of industrial life that most markedly differentiate England from other countries.

Vital statistics parallel with those given for other towns are not available for Philadelphia, which is not at all to its credit.

Miscellaneous Statistics.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
2,822	1,737	30,428

Places of Worship.	Theatres.	Newspapers.	Public Libraries.
760	16	184 (26 daily)	15

Pittsburg.

Between Philadelphia and Pittsburg lies the width of Pennsylvania and much more. To go from one to the other is not merely to cross the Alleghenies, where the coal-fields lie hidden up among the hills, but it is to pass from the east to the west. For the great coal and iron State has two faces—one turned towards the east, the old, the more settled and mature, with its comparatively fixed lines and limited range of development; the other towards the west, the new, the raw and adolescent with its incalculable possibilities, fierce throb of life and keen spirit of adventure. Pittsburg is the gateway of the west and through its portals rushes the tide of the newer industrial America. Here the stream is most turbulent, the battle fiercest, the jostling throng most eager. Further west the volume spreads out in many directions over a broad surface and quiets down; but here it seems pent up into a narrow gorge, through which it tears and surges, like Niagara river between the Falls and the broad calm expanse of the so-called Whirlpool. Thus it is that Pittsburg is in a sense the most typical industrial centre in the State. It gathers up and concentrates the restless energy, the reckless hurry to make money and the contempt for everything else, of the newer industrial world. I suppose some of the English manufacturing towns passed through this stage once. Grime and squalor unspeakable, unlimited hours of work, ferocious contests between labour and capital, the fiercest commercial scrambling for the money literally sweated out of the people, the utter absorption by high and low of every faculty in getting and grabbing, total indifference to all other ideals and aspirations—these marked the rise of the great English industrial edifice, and they mark the centre point of the much vaster American one to-day.

Pittsburg is not a town of yesterday; it took its name from the English statesman and has had a charter since 1816, which represents quite a respectable antiquity. The name, by the way, is spelt both with and without a final "h"; the local official street guide spells it both ways, the U.S.A. census leaves out the "h". I have already mentioned that a steel furnace and a rolling mill were in operation in 1813, and that the situation of the place on the Ohio river made it a trading centre in the period before railways were built, but its rise to industrial importance really dates from the western development of the Pennsylvania coal and iron fields, followed by the opening up of the Lake Superior region. The town itself, however, only represents a part of the vast industrial edifice which has been built up here as a result of that movement. The name is loosely used for the whole district. For instance, none of the famous Carnegie steel concerns are in Pittsburg itself, nor are the Westinghouse works, nor others which are commonly described as "at Pittsburg". The correct geographical expression is "Allegheny County" which includes Pittsburg as the central point and business headquarters, surrounded by numerous minor centres or satellites—Allegheny, McKeesport, Duquesne, Homestead, Braddock, Wilmerding, and others—all within a small compass. It is a wonderful and unique concentration. Neither the Ruhr Valley nor South Staffordshire equals Allegheny County. Here truly iron is king, seated on a throne of coal. The population of the county is 775,058 and nearly one-tenth (72,671) are employed in 236 establishments devoted to iron and its products.[1] The only other industries on a large scale are electrical supplies, glass, cars and air-brakes. Pittsburg itself represents

[1] These figures are taken from the annual report of the factory inspector for Pennsylvania, 1903.

less than half the population of the county and a still smaller proportion of its industrial section, since it is the commercial and traffic centre. No one who sees Pittsburg alone and misses the satellites knows what the name really signifies. Yet it is pre-eminently a manufacturing town comparable with Sheffield and resembling it more nearly in size and character than any other place. It lies on the point of land where the Allegheny and Monongahela rivers join to form the Ohio. This is the site of an old fort, which bore the name of Du Quesne under the French, and subsequently that of Pitt under the English. The situation, which recalls that of the famous Hungarian fortress, Komárom or Komorn, on the Danube, was obviously chosen for the protection afforded by the two smaller rivers. They are shallow, rapid, turbid streams capable of carrying craft of very light draft. On the opposite bank of the Allegheny lies Allegheny city. The two towns are connected by nine bridges and are therefore topographically one. Sundry small suburbs occupying a similar position across the Monongahela have already been annexed by Pittsburg; if it were to swallow Allegheny in like manner it would rank seventh instead of eleventh among the cities of the United States. And it might very well look forward to a still more grandiose position. For the outlying industrial boroughs are at no great distance and if the recent rate of development is maintained the intervening space will be rapidly filled up, and Pittsburg might extend her administrative ægis over the whole.

Imagination fails to picture the hideous scene that would be presented by such an enlarged Pittsburg. Someone has called the place "Hell with the lid off," and sundry persons have paid him the compliment of annexing the phrase. It has even been presented to the House of Commons as an original effort on the part of a well-known

member of that assembly. Its picturesque force suggests an American origin, but, whoever the author may be, every visitor must acknowledge its appropriateness. People have said to me, "Well, but what about Sheffield?" I have already made the comparison in describing Essen and can only repeat that compared with Pittsburg and its neighbourhood Sheffield is a pleasure resort. The heart of the town is not so bad. There are fine shops and fairly good public buildings and the main streets do not lack dignity though they are much too narrow to carry the swarming traffic; the warning clang! clang! of the street cars is incessant and they can only move at a foot's pace. The congestion is greater than in New York, Philadelphia or Boston, and is only surpassed by London. In the pollution of the atmosphere by smoke Pittsburg beats the world, and in this respect it presents a striking contrast to the eastward towns already described, where anthracite coal is burnt. A rough way of measuring smokiness is to note the condition of one's linen, and two measures may be used—the tint produced and the time taken to produce it. Judged by these tests Pittsburg is at least twice as smoky as Sheffield or Manchester, and London cannot compete at all except in a bad fog. The buildings, which become black sooner than they do anywhere else, attest the same supremacy. There appears to be no attempt whatever to prevent or mitigate smoke, and the nature of the factory chimneys conduces to increase it. Instead of having a comparatively small number of lofty brick shafts the iron and steel works use a much greater number of short metal ones resembling steamer funnels. For instance at Essen the steel works, in which 25,000 men are employed, are served by about sixty tall shafts; at Homestead the steel works, in which only 6,000 men are employed, have about 150 short ones.

The latter may be more economical or efficient, though I doubt it, but they certainly produce far more smoke and emit it nearer the ground where it has less chance of being carried away. This is one reason for the supreme smokiness of the Pittsburg district. Another is the lie of the ground. The river valleys are rather deep and the smoke from the works, which lie low along the banks, is pent in by the hills rising behind to a considerable height. Some years ago, I believe, natural gas was largely used and the smoke abated; but possibly this has been abandoned from failure of the supply. At any rate it is hard to believe that things were ever worse.

The smoke, however, is only one item, and though particularly obtrusive to the senses less significant than others. You must leave the centre of the town and journey to the outskirts and beyond to see what this representative modern American city really is. In the first place notice the wires overhead. There is a network of them—telegraph, telephone and tram wires—and they are put up in a slovenly, makeshift fashion. The telegraph supports are not straight, dressed poles, firmly planted and braced upright, but rough trunks of fir trees leaning in every direction, with the wires between them not drawn taut but sagging heavily. The others are in like case; they lean and sag and straggle. Everything is rough, unfinished, rushed up and apparently on the point of falling down in a ruin. In the second place, notice how the car bumps and rattles over the ill laid metals, along the wretchedly made and worse kept roadway, filled with garbage and filth. Then as you pass a little further out you come to the bare hill sides rising from the river. The place is certainly not favoured by nature for these river banks must always have been dreary; but their ugliness has been increased tenfold. At

one spot they are naked, at another they carry clumps of miserable dilapidated wooden houses or single ones standing alone. Everything bears the same stamp of rubbish and ruin. Rotting fences stand before these houses, broken wooden steps lead up to them, drains trickle down the hill beside them; here and there a dead tree stretches out its withered arms. The air is murky with the gloom of perpetual smoke, and through it gleams the mockery of washed clothes hanging out to dry; women are said to wear black underclothes in Pittsburg.

Such is Pittsburg along a main road leading out of the heart of the town. It is not all as bad as that. In the better residential quarters the houses are good and some of the suburbs on the high ground away from the rivers and the works are even free from smoke. By contrast they are considered quite attractive. On the other hand some of the more densely inhabited parts are even worse; as an exhibition of modern and recently built slums they have no equal in my experience. And if the visitor pursues the same road a few miles further he will come to something which puts Pittsburg in the shade; and that is Homestead, the first of the series of small towns up the Monongahela Valley more or less created by the various iron and steel works which bear the name of Carnegie. If Pittsburg is hell with the lid off Homestead is hell with the hatches on. Never was place more egregiously misnamed. Here is nothing but unrelieved gloom and grind; on one side the fuming, groaning works where men sweat at the furnaces and rolling mills twelve hours a day for seven days a week; on the other, rows of wretched hovels where they eat and sleep, having neither time nor energy left for anything else. Nor is there anything else for them to do if they wished. I was not surprised at the English work-

man who told me that if any one would give him five dollars a week he would go home and live like a gentleman in—the Black Country. Five dollars a day are no uncommon earnings at Homestead, but they are dear at the price. The output is enormous and there is an appearance of great efficiency, but such industrial conditions as these are not stable. The human element demands recognition and will obtain it. Trade unionism has been put down with an iron hand dipped in blood, and it is kept down. It has not been recognised since the violent contest of 1892, but it is a plant which does not die when it has anything to feed on, and here it has much. To watch and keep it under is anxious work, and eventually futile. The management shows obvious signs of nervousness on the subject, and nervousness is weakness. The following details of wages were given me: Day labourers, 6s. and 7s.; helpers (young men), 9s. and 10s. a day; helpers on the mills (tonnage men), 28s. a day; rollers, £2 to £4 a day; heaters on the furnace, £30 every two weeks.

Beyond Homestead the valley is dotted at short distances with other large works belonging to the Carnegie Steel Company. At Rankin, Braddock and Duquesne they obtrude themselves in the same way and produce the same effects. These works, in which some 13,000 or 14,000 men are employed, are a great manifestation of energy, no doubt, but hardly of the most admirable kind. They represent the success of a keen commercial instinct and an unswerving devotion to money-making, relentlessly pursued. It has served industry by cheapening production, but I cannot find that it has originated anything. It has fattened on other men's brains and sweat, and in the pursuit of cheapness and commercial success it has trampled better things under foot. One may bow to the genius

which has created an Essen or an Elswick, but only those who worship the god of gold can pay homage to the lord of squalor who sits enthroned on the Monongahela. The money made here carries a taint with it—*olet.*

Examples of a different sort of industrial efficiency of which America may be justly proud are to be found a little further on in the same neighbourhood. The Westinghouse establishments at Wilmerding and East Pittsburg stand for the highest type of American industrial genius and must command admiration. They are the creation of an innovator, an organiser and a worker of the same mould as those whose brains and labour have built up great industries in the old world. His name ranks with those of Krupp, Siemens, Armstrong and Lister. Mr. Westinghouse is a born inventor. His air-brake is as well known in Europe as in America, and if his work in electrical appliances—the adaptation of alternating currents, the induction motor, methods of lighting, and other things—is less familiar it is because the subject is more obscure. Whenever I get upon an electric tram-car in England I look at the mechanism, and I too often find Pittsburg stamped on it. It comes from the Westinghouse works. Since the establishment of a branch at Manchester the name has become more generally associated with electrical machinery; but Mr. Westinghouse is also an inventor and large manufacturer of gas and other engines. The Manchester works are modelled on those near Pittsburg, and the remarkable scale on which all these great establishments are built, their organisation, equipment and general adaptation of means to an end reveal a master mind. I do not know of anything which has a superior claim to respresent the best model of modern factory installation in regard to premises, plant and working conditions. It conforms to the standard,

though on a larger scale, which I have mentioned above in describing the Brown and Sharpe works at Providence as the coming type. The shops are well built, lighted and warmed, well arranged and well kept, and the well-being of the workers is considered, as an element of efficiency. All requisite conveniences, such as clothes-lockers and lavatories, are provided, but no superfluities. The working week is fifty-four hours. The day begins at 7 A.M. and ends at 5.30 P.M. with three quarters of an hour for dinner; on Saturday they leave off at 12.30 P.M. The hours are therefore quite up to the English standard. A great many girls are employed; as coil winders they are paid 5d. an hour. The total number of persons employed in 1902 at the three large establishments in East Pittsburg and Wilmerding was about 11,000. A special feature of these works, which may be partly responsible for the exaggerated belief in the virtues of "scrapping" is the practice of constantly trying new machinery. But that is due to the personal genius of Mr. Westinghouse, who continues to work at mechanical experiments and not only invents the appliances which he produces but frequently devises special tools and machines for making them. I was informed that a certain quantity of machinery is regularly displaced every two or three months, but it is sold, not "scrapped". The working habits of the creator and head of this great concern are an example of the highest form of industrial enterprise. Though his years are no longer few he is not content to sink into a well-earned repose, but comes down regularly to the works and takes off his coat in the experimental department among the experts he has gathered round him. Pupils come here from all parts of the world, and no one who goes over the establishment can doubt that they come to the right

place and the right man. Technical schools are many and various, but this kind is still the best of all.

Wilmerding is not such a dreadful place as Homestead; it is tolerable but dreary. I asked what the men did in their leisure and was told that they do not play games; there is nothing for them to do but go to the public houses, of which there is one to every hundred inhabitants.

All these Pittsburg satellites are very small but rapidly growing towns. Braddock has about 15,000 inhabitants (1900); Homestead, 12,000; Duquesne, 9,000; Wilmerding 5,000, and the others a smaller number. But McKeesport, which lies a little higher up the Monongahela, is a more important place with 34,227. It is another iron and steel centre and of the same stamp as its neighbours—a dismal, uninviting little town. The large works of the National Tube Company are the principal establishment. Like the Carnegie Company this is a member of the United States Steel Corporation. That huge combination, however, has not absorbed all the steel works of Pittsburg. The largest business in the city itself, that of Jones and Laughlin, stood out when the Corporation was formed and declined to join it. It is a very strong concern, possessing its own iron mines and able to maintain an independent position. I have met with manufacturers who preferred to deal with it for their raw material because it was outside the combination. There are others in a similar position, and though they are all small in comparison with the Corporation, they prevent the latter from having the monopoly of the market, with which it has been credited.

Pittsburg, with a population of 321,616 (1900), ranks eleventh among the cities of the United States, coming between Cincinnati and New Orleans. The population has more than doubled in twenty years, partly by the absorp-

tion of outlying districts, which is a regular episode in the growth of towns. With Allegheny the total would be about 450,000 or rather more than that of Leeds. The percentage of foreign-born is 26·4. Germans are the most numerous (21,222), followed by Irish (18,620), English and Scotch (13,705), Poles (11,184), Austro-Hungarians (5,752), Italians (5,709) and Russians (4,107). As elsewhere the four last nationalities represent unskilled labour, which is largely employed in the great works. In going over the works at Homestead I asked my way of four men in succession, not one of whom understood a word of English; they looked like Hungarians. Of the total population engaged in "gainful occupations" 26 per cent. are occupied in "trade and transport" and 37 per cent. in "manufacturing and mechanical pursuits". The manufacturing element, therefore, largely preponderates. In addition to these industries already mentioned (iron and steel, machinery and glass), "marble and stone work," pottery and tobacco employ several thousand hands. The other industries are on a small scale and there are no textiles at all.

The large proportion engaged in "trade and transport," however, indicates a great commercial activity. Chronologically this element comes first, for the early importance of the place, as I have already pointed out, lay in its position at the head of the Ohio system of waterways; it has grown with the manufactures, the development of the coal-fields and the railways, and it will continue to grow. The further development of the industrial middle West will all bring grist to the Pittsburg mills. I can see no limit to its possible expansion, lying where it does at the gate of the West, in direct communication with New York (through Philadelphia), with Baltimore, Washington and the South Eastern States, with Cincinnati and the Mississippi States, with

Buffalo, with Cleveland and with Chicago. It is a great centre, indeed, on which all these threads converge. Twelve railway companies run their lines into and out of Pittsburg. It is a place to toil in and get rich—the best, I daresay, in the world; and it is a place to toil in and go under —the worst in the world. I have spoken of the conditions of life; they are generally bad and sometimes extremely wretched. Everything is excessively dear; the cost of living is higher than I have found it anywhere else; housing is dearer, worse and scarcer than anywhere else. Rents are from 3s. to 5s. a week per room; down at Homestead a man will pay 8s. a week for a room if he wants it to himself, and an uncommonly poor one at that. While I was in Pittsburg a poor woman one day wandered round with her children looking in vain for a lodging until she fell exhausted in the street. It happened to be outside the Stock Exchange or some such place, so the case made a stir, the attention of members coming out was drawn to it and the woman was assisted. My belief is that if a thorough investigation of housing and living conditions were made in and around Pittsburg the disclosures would put in the shade anything that can be found in New York, London, Paris, Liverpool or any other great city famous for slums. The town possesses a large area of parks, but they are all a long way out with the exception of Schenley, and that is not near the poorer residential districts.

With regard to education there is little to be said. Less attention appears to be paid to it than in other large towns in the North. There are the usual elementary schools, but no evening classes; and the high school provision is relatively small. For superior and special education there is, or was until recently, no provision. The project of a technical school was under discussion in 1903 and was the

subject of one of those innumerable local scandals which pervade municipal life in America; a portion of it has lately been opened.

The registered death-rate in 1901 was 19·7. Typhoid fever was excessively rife and caused a higher rate of mortality—12 per 10,000 inhabitants—than in any other American city.

Miscellaneous Statistics of Pittsburg, 1901.

Police Force.	Liquor Licences.	Arrests for Drunkenness.
497	572	15,040

Places of Worship.	Theatres.	Newspapers.	Public Library.
170	—	59	1

Ohio and Illinois.

I am reluctantly compelled by reasons of time and space to omit these two great industrial States from my survey; but to pass them over altogether would be to give an incomplete impression of the resources and development of the United States.

Ohio ranks fifth among the States in the value of manufactured products and it is steadily becoming more industrial in character. The "wage-earners employed in manufacturing establishments" increased from 2·6 per cent. to 8·3 per cent. of the population between 1850 and 1900. Lying contiguous to Pennsylvania it enjoys the same advantages as the western side of that State, namely, proximity to the coal-fields on the one hand and access to water communication by the great lakes and the Mississippi on the other. It is therefore natural that both should be distinguished by the same class of products. Since 1870 Ohio has ranked second only to Pennsylvania in the production of iron and steel, which forms its leading industry. It is a little nearer the Lake Superior ores and a little further from the Pennsylvania fuel supplies; and these two factors fairly balance

each other. Cleveland, which is the chief iron and steel centre, is not very many miles beyond Pittsburg and enjoys an almost equal command of fuel and particularly of the great coke supplies from the Connellsville hills. Other important centres are Loraine and Youngstown. The second great industry is machinery. In the manufacture of metal working machinery Ohio is the leading State; the chief centres are Cleveland, Cincinnati, Columbus and Hamilton. Agricultural machinery is another important branch; it is made at Springfield, Dayton, Akron, and elsewhere. At Dayton is the celebrated model establishment of the National Cash Register Company. Among other industries boots and shoes, pottery, cars, clothing, tobacco and lumber are the most important. A little hosiery is made, but textiles in general are conspicuously absent.

Illinois is the third State in rank, as measured by the value of manufactures. This is very largely due to the meat-packing trade, centred in Chicago. It is a great national asset, but a specially American trade, and therefore valueless for purposes of comparison. A great deal of machinery is also made in Illinois and the manufacture of agricultural implements is the second industry in importance. That is also chiefly centred in Chicago. The iron and steel works are considerable and increasing. The principal seats are Chicago and Joliet. The other industries are very numerous but do not present any special features. Chicago has the industrial character of a great capital; in addition to the staple trades mentioned a host of miscellaneous manufactures, such as minister to the needs of a large population, are carried on. There is no other large city to dispute its supremacy. The other manufacturing towns are small. Peoria, Quincey, Springfield, Rockford, East St. Louis and Joliet are the principal ones.

No doubt Ohio and Illinois have a great industrial future before them ; how great it is impossible to say. But from the competitive point of view they are still, in spite of their growth, less important than the New England and the Middle States ; and though the former may wane owing to their situation the latter are for the same reason not likely to yield their supremacy. There is certainly no sign of slackening energy or capacity in Pennsylvania or New York as compared with the Middle West.

The Southern States.

To pass from the regions just discussed to the South is to enter another world. The great cities, the cosmopolitan crowds, the rush and struggle of life, the smoke and roar of the furnace are left behind ; and one comes into a wide, quiet land of little towns and villages, separated by long tracts of undulating country often clothed in trees, with the inviting outline of high hills in the background. An agricultural land in the main, producing cotton, corn, rice, tobacco and sugar. But it has of late years been undergoing a rapid industrial development. The ravages caused by the Civil War have been repaired, capital has been introduced and manufactures built up. They are concerned with the raw materials produced in the region and are more varied than might be supposed. Cotton is by far the most important, and in the industrial competition of the world the cotton mills of the Southern States are a factor to be reckoned with. They cannot be omitted from any survey of the competitive capacity of the United States, and it is the more necessary to notice them because of the peculiar labour conditions prevailing in these States. Most of the other industries stand on a different footing and do not call for notice here ; they are concerned with the

various food stuffs locally raised, with tobacco, turpentine, cotton-seed oil, petroleum and lumber. But there is one, in addition to cotton, which ought to be mentioned, and that is iron. The mountain chain which forms the back bone of Pennsylvania and is the mother of those great industries which have just been described, extends from north to south through or past the Virginias, the Carolinas and Georgia right down to Alabama; and it does not lose its virtue all the way. In Alabama there are extensive deposits of coal and iron ore, with limestone, which are now actively worked. This State is second only to Pennsylvania and West Virginia in the production of coke, and owing to local deposits and cheap labour it is able to produce pig iron very much cheaper than any other. In 1900 it stood first in the production of iron for casting and in the export of pig (113,185 tons, largely to England). This advantage is rapidly leading to the development of secondary industries—steel, cast iron goods (particularly tubes and stoves), engines and machinery. In short, Alabama promises to play the same part in this field that the Carolinas and Georgia are playing in the cotton industry; it already has several growing centres, bearing such significant names as Birmingham, Bessemer and Sheffield. With these few preliminary observations I will pass on to the cotton manufactures of the South.

According to Comtelburo's list there were in the Southern States in 1903, 594 mills with 6,714,589 spindles and 153,741 looms employing 110,000 hands. The "Southern States" means practically North and South Carolina, Georgia and Alabama, though the industry is carried on upon a small scale in many others. Some cotton manufacturing, I may observe, is done in no fewer than thirty-two States of the Union, but the scale is very small in most of them. The real business is concentrated in some eight

States in the North and four in the South. As I have already pointed out, Massachusetts is by far the most important of them, but the Carolinas come next. The best measure of importance is not, I think, the value of the product, which varies with the class of goods, but the number of persons employed. In 1900 the principal cotton States stood thus:—

State.	Average Number of Wage-earners.
Massachusetts	92,085
North Carolina	30,273
South Carolina	30,201
Rhode Island	21,823
New Hampshire	20,454
Georgia	18,283

Since 1900, however, the Southern States have undergone a rapid expansion. According to the *New York Commercial and Financial Chronicle* the following increase has taken place:—

Southern States, 1900 and 1903.

	Mills.	Spindles.	Looms.	Consumption (bales).
1900	400	4,298,188	110,015	1,479,006
1903	594	6,714,589	153,748	1,949,902

The rapid increase is the striking fact about these States Between 1890 and 1903 the number of mills increased 144 per cent.; spindles, 332 per cent.; looms, 323 per cent., and consumption, 270 per cent. Such a development as this is portentous. Proximity to the raw material is, of course, the primary reason, but cheap labour is also an important inducement. There are practically no factory laws in these States and until recently there has been no restriction on the employment of child labour. These advantages have attracted northern capital, and mills have multiplied with astonishing rapidity, particularly in South Carolina, which has now distanced all other States except Massachusetts and ranks easily second in cotton manufactures, having some

2,500,000 spindles and 60,000 looms. It is a singular and interesting industrial district, totally unlike any other that I have ever seen. There are no large towns and not many small ones; but for hundreds of miles the mills are put down here and there along the railways, generally in groups of two, three, five or perhaps eight or ten. The largest cotton towns in South Carolina are the capital, Columbia (21,000), Greenville and Spartanburg (12,000 each). Those in North Carolina are hardly so large; they are not towns at all, but large villages. In Georgia they run somewhat bigger; Atlanta and Augusta, which are both the seats of cotton manufactures, must be called towns. Speaking generally, however, it would be true to say that we have here an elongated string of mill villages extending for hundreds of miles. Some of them have been created out of the forest and consist of nothing whatever but the mills and the mill population. In some cases the selection of the site has been determined solely by the railway and the cotton-fields; in others water-power is a third factor. A good deal of water-power is applied in these States, though much less than in New England, and in some cases it is applied in the most modern form and converted into electricity. In one settlement I visited I found a mill containing 68,000 spindles and 1,500 looms operated by electricity to the amount of 3,600 horse-power, the current being brought a distance of four miles from the power-house on the river.

The mills are modern, spacious and good. They are built of red brick, made on the spot. I was particularly struck with the spaciousness of some of the rooms, permitting ease of movement among the machinery without danger. The lighting and the ventilation are good; humidifiers are general, and there is little doubt that the successful development of the industry is largely dependent

on the use of these devices. All the machinery that I saw was American, made in the North; probably the machinery makers have a financial interest in the erection of many of the mills, as in Lancashire. The only serious fault to find with the premises was the dustiness of the atmosphere in the blowing and carding-rooms. They were generally full of cotton fibre, and the machinery was smothered in it. A striking feature is the great size of some of the mills. The Olympia at Columbia is celebrated on this account; the three mills belonging to the Company contain 190,000 spindles and 4,700 looms; the largest of these great structures contains 100,000 spindles and 2,400 looms under one roof, in rooms 550 feet by 150 feet.

Now these Southern mills have been the subject of a great deal of controversy, chiefly on account of the long hours worked and the employment of child labour. The hours are undeniably long—sixty-three and sixty-six hours a week are the rule, and a great deal of child labour is employed. In 1900 the number of children under sixteen employed in cotton mills in the Southern States was 24,438. Every one must agree that for children the hours are too long. Moreover a considerable proportion of them were very young. There is no age limit in Georgia and the legislature has declined to make one; there was none in South Carolina until May, 1903, when ten years was adopted, rising yearly to twelve; in North Carolina and Alabama the limit is twelve years. As a matter of fact very young children have been employed; I have seen them myself. They are sent into the mill by their parents, as they used to be in England. But these facts seem to have stimulated some writers to paint the Southern mills in a deep uniform black, unrelieved by any white or even grey. They have set out to find horrors and have found

them, sometimes without going through the ceremony of entering the mills. This agitation has naturally provoked replies, and independent investigations have shown the other side. Beyond the facts mentioned, my own observations do not bear out the charges made, though I have been through some of the mills most violently attacked and have carefully examined the work-people both within and without the factory. There is no doubt that, although wages are relatively low, they earn far more money than they did outside and are able to live better. Nor could I discover any signs of dissatisfaction with their condition. These work-people are very interesting because they are a class apart. They are pure Americans; there are no foreigners among them. The proportion of population born of native parents in the States we are considering is: Alabama, 97·5 per cent.; Georgia, 98·3 per cent.; North Carolina, 99·3 per cent.; South Carolina, 98·7 per cent. A very large proportion of this native population is negro. In South Carolina the negro element considerably exceeds the white; in North Carolina it is about one-third of the whole; in Alabama and Georgia nearly one-half. But the negro element plays no part in the cotton manufactures, which are carried on entirely by white labour. Negroes have been tried, but the experiment has failed. It has been found impossible to get them to work; it is said that the machinery sends them to sleep. I understand that the race feeling is an absolute bar to the joint employment of white and coloured labour; it is exceedingly strong in this part of America; at all the railway stations, no matter how small, separate rooms are provided for white and coloured passengers, who refuse to mingle.

Consequently the mills are entirely manned by whites. They come from off the land and largely from the farms

up in the hills. These are the "poor whites" of the South, and poor indeed. They scrape a bare living off the farms and hardly that sometimes. To them the mill is wealth and they rush into it eagerly, men, women and children. Their labour is quite unskilled when they arrive; they have to learn in the mill, and the children often learn much quicker than the parents and bring in more money to the family exchequer. In one large mill a girl of about fifteen was pointed out to me as the best weaver they had. From published details and from particulars obtained by myself I find the rates of daily earnings to be as follows: Spinners, 15d. to 4s.; card-room hands, 2s. to 6s.; weavers, 3s. to 7s. The low earnings of spinners is due to the fact that all spinning is done on ring frames and requires comparatively little skill. Weaving is generally done on Northrop automatic looms and according to skill, the number of looms operated and the wages earned vary widely. These earnings will appear very low, but the cost of living is relatively still lower. Food of all kinds is very cheap and poultry in particular ridiculously so; chickens cost from 4d. to 1s., ducks, 7d., turkeys, 2s. and 3s.; meat is 5d. to 8d. a lb.; flour, 14s. to 20s. a barrel; eggs, 4d. to 8d a dozen. In short, food is about one-half the price it is in the North. Rents are still lower. As the mills are generally put down where there were no dwellings before, the owners have to provide them. The houses are of wood on brick supports and generally hold one or two families. The rents for such houses are as low as 2s. and 3s. a week for a good four-roomed dwelling. It will be seen from these details that the conditions of life are by no means so bad as might be inferred from the wages and hours and absence of factory laws. They are, in fact, better than in the more "advanced" communities in the

North. I have not said anything before about the price of food and the cost of living in America, except in regard to housing, because they will be discussed in a subsequent chapter; but the difference between North and South is so great as to more than counterbalance the difference in earnings. And in regard to other external conditions the advantage lies equally with the South. Life is rural, not urban, in these mill settlements; there is none of the squalor and congestion of the town; the people live close to their work amid surroundings which are often charming and sometimes ideal—veritable garden cities. Such a one is Pelzer in South Carolina. It has a population of 7,000 to 8,000, which has grown up round the mills in twenty years. The business was started in 1881 with one mill containing 10,000 spindles; there are now four containing 130,000 spindles and 3,600 looms and giving employment to nearly 3,000 hands. The whole place is owned by the firm, which has built it all. The people have good houses for which they pay 8s. a month rent, churches of various denominations, schools and stores, where they can buy every necessary good and cheap. It is all set among fir trees in very pretty country. No liquor is sold in the place. These people are not badly off or discontented; they have £20,000 in the savings-bank and get 4 per cent. interest on it. The Southern mill operatives require very little supervision and work just as well without it. The weather is very hot in summer, no doubt, but they are natives and accustomed to it. A town-bred people would find it dull, but it is less dull than the lonely farms from which they come. I nowhere found any local feeling against the mills, which have brought work and wages. In one of the larger towns I had a long talk with a policeman about them, an intelligent and kindly man. He spoke enthusiastically of the mills,

and he had some knowledge of them, as he had sent his own son into them ; the boy earned a shilling his first day.

The competitive importance of the Southern cotton industry lies at present wholly in the lower grades of goods. Some mills are equipped for finer work but in the great majority low counts of yarn are spun and plain cloth or common prints are woven. The goods are produced on a great scale and very cheaply. A mill running (say) 1,200 or 1,500 automatic looms, with an average of one weaver to sixteen looms, and devoted wholly to one grade of cloth can produce an enormous quantity at a very low cost. The effect has hitherto been visible chiefly in the China trade, which is being captured from England. Next to India China was, and still is, Lancashire's best customer, but the Southern mills seem to have the game in their own hands ; the U.S.A. exports to China rose (in thousands of yards) from 101,687 in 1900 to 326,419 in 1902. In India also they are beginning to tell. Of course the Southern mills compete with the Northern, and many of the latter have been hard hit. Hence the great strike of 1904 at Fall River which ended in a reduction of wages. This competition is apparently leading, as it usually does, to differentiation of products and local specialisation. The Northern mills are aiming more at finer grades. The advantages possessed by the South in proximity to the cotton-fields are not always so great as might be supposed. In some districts the manufacturers have had a great grievance on account of the differential railway rates, which operate against them both in shipping goods at the nearest port and in obtaining cotton. It may be interesting to English manufacturers who complain of unfair railway rates to know that in South Carolina carriage from certain inland points to Charleston (the nearest port) has been charged

60 per cent. more than exactly the same carriage upon goods to be shipped through to New England. With regard to obtaining cotton it is to be noted that the mill districts consume a great deal more cotton that they raise and the deficiency has to be supplied from a distance. The question of supply is, indeed, more important than that of competition, as the trade in England has realised. The growth of American mills does not necessarily mean competition. Many of them cater for a new trade and produce nothing but a very coarse cloth for meat-packing. I heard of some projected mills to be built in Texas with a capital of over two millions sterling for this trade alone. But the supply is limited and the rapid increase of local manufactures has a very serious significance for other users. Already in 1900 the Southern States used more than one-third of their production and in 1903 their consumption had increased by 500,000 bales. The American mills do not exclusively use home-grown cotton, but in so far as they do not they are buyers in the world's market, and the effect on other consumers is the same. The need of fresh sources of supply is therefore obvious.

I end these descriptive chapters, as I began them, with cotton, the largest and most important of all single industries. It may be fittingly concluded by a statistical comparison between the three countries so far as information serves.

	Great Britain. (1902)	Germany. (1901)	United States. (N. 1900, S. 1903)
Mills	2,077	390	1,151
Spindles	49,727,107	8,434,601	21,212,827
Looms	719,398	211,818	488,760
Consumption (bales)	3,269,000	1,580,895	4,164,948
Hands employed	530,000	350,000	307,137
Exports of cotton cloth in thousands of yards	5,330,725		(1902) 525,517

The exports of Germany are only given in hundreds of kilos; in 1902 they were 443,566. The exports do not indicate the real position of Great Britain because they do not include yarn, of which 1,100,000,000 pounds were exported in 1901-02. A curious fact is that the United States manufactures more cotton than Great Britain but employs not many more than half the number of hands. This is due to the comparatively coarse character of the goods manufactured and the use of automatic looms. A further point of great interest is the relative number of men, women and children employed. The census gives the following :—

England and Wales.

	1881.	1891.	1901.
Total number employed .	487,777	546,015	529,131
Males over 15 . . .	156,971	176,991	173,139
Females over 15 . .	263,464	283,618	296,119
Children under 15 . .	67,342	85,406	59,873

United States.

	1880.	1890.	1900.
Total number employed .	172,544	218,876	297,929[1]
Males over 16 . . .	59,685	88,837	134,354
Females over 16 . .	84,539	106,607	123,709
Children under 16 . .	28,320	23,432	39,866

It will be noted that the proportion of men employed in the United States is very much larger than in England and that it has risen much more rapidly than the proportion of women. In the United States more men are being employed; in England more women. On the other hand the proportion of children has fallen considerably in England and risen in the States. The last change is wholly due to the Southern mills; in the Northern mills the proportion of children has diminished.

[1] This does not agree with the number previously given; it refers only to 1900, and does not include cotton small wares.

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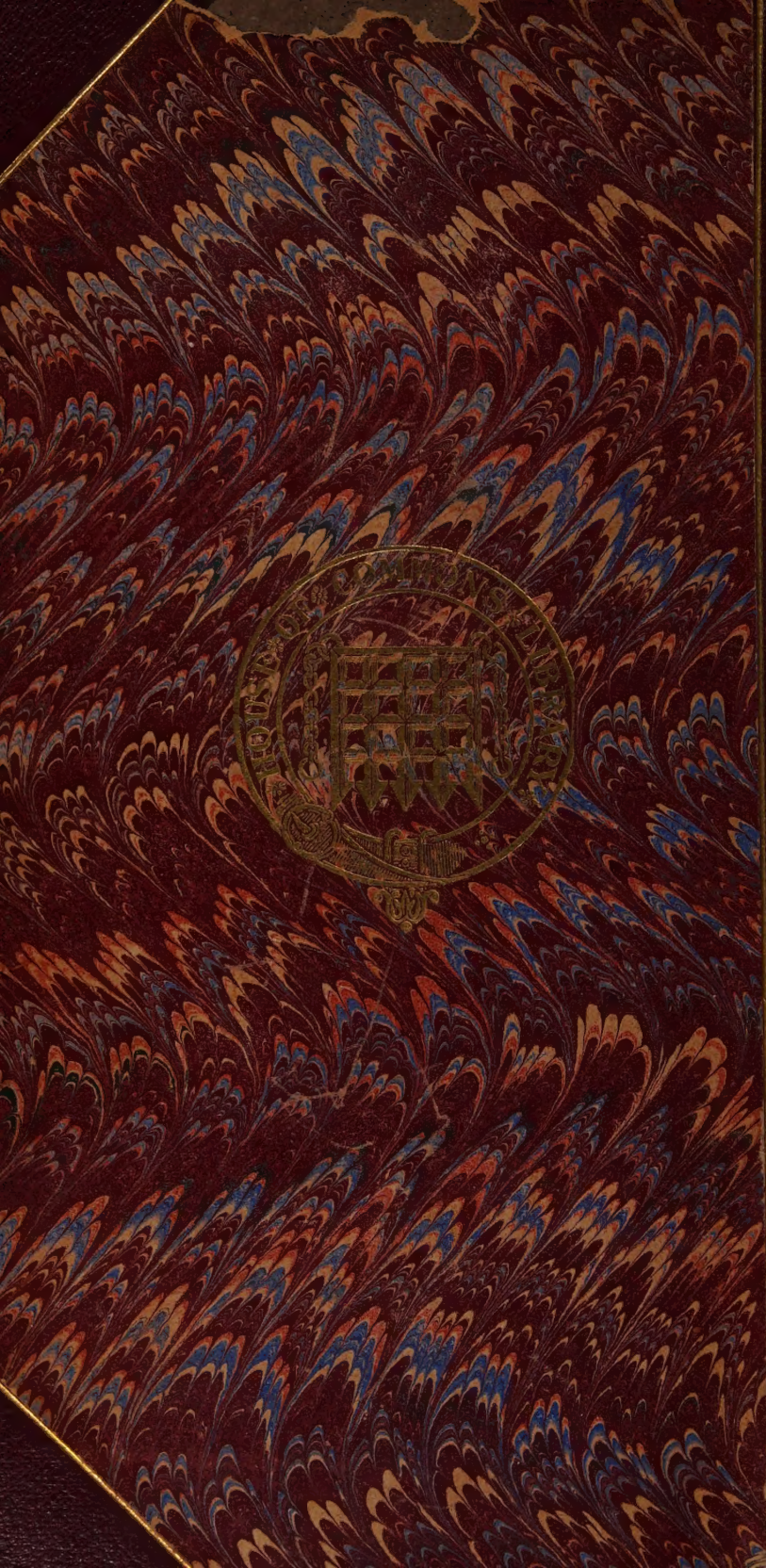
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